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István Tóperczer

# MiG-21 ACES OF THE VIETNAM WAR



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SERIES EDITOR TONY HOLMES

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OSPREY  
PUBLISHING

**This book is dedicated to the memory of MiG-21 pilots Nguyen Nhat Chieu,  
Le Trong Huyen, Dang Ngoc Ngu, Do Van Lanh and Dinh Ton**



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# INTRODUCTION

The Vietnam People's Air Force (VPAF) had to be created from scratch. One result was that, once training had been completed, its fighter pilots immediately faced unusual challenges. For, during the conflict with the United States, the presence of hostile aircraft in the VPAF's airspace demanded rapid and effective responses from the North Vietnamese forces both in the air and on the ground.

At the beginning of April 1965, the fledgling VPAF had thrown its MiG-17 'Fresco' units into combat with American aircraft over Thanh Hoa. In the first aerial engagements – on the 3rd and 4th of that month – an F-8 Crusader was damaged and two F-105 Thunderchiefs were shot down. From June onwards, the MiG-17s were engaged in numerous dogfights with enemy aircraft and claimed several aerial victories. The USAF soon realised that, heavily laden with bombs, its F-105s were no match for the nimble MiG-17s, which meant that the higher-performing F-4 fighter-bombers were committed to the aerial conflict over North Vietnam in ever increasing numbers in an effort to put the VPAF fighter pilots under greater pressure.

But relief was on the way for the hard-pressed MiG-17 pilots. In February 1965, the Soviet Union had agreed to supply two key strategic anti-aircraft weapons to Vietnam, namely the S-75 Dvina/Volhov (SA-2 'Guideline') surface-to-air missile (SAM) and the MiG-21 'Fishbed' fighter-interceptor; the latter boasted considerably higher performance than the MiG-17. To prepare for the new fighters, the Ministry of Defence sent VPAF pilots and engineers to train in the Soviet Union in April of that same year.

By the end of 1965, when the first batch of MiG-21s arrived from the Soviet Union, both the USAF and VPAF had fundamentally changed their tactics and strategy. The following January the 921st 'Sao Do' (Red Star) Fighter Regiment (Trung Doan Khong Quan Tiem Kich 921) officially introduced the MiG-21 into service, flying the supersonic interceptors alongside the older MiG-17s from February. On 4 March 1966, just under a year after the first official MiG-17 victory had been recorded, a MiG-21 intercepted and shot down a Ryan Firebee reconnaissance drone overflying North Vietnam at high altitude. While some pilots preferred the MiG-17's greater manoeuvrability, those flying the MiG-21 soon learned that their new fighter was effective in 'hit-and-run' attacks. They also found that the 'Fishbed' was considerably faster and more agile than the

enemy aircraft they were up against. Moreover, the MiG-21 had a reliable engine, was easy to maintain and could operate from rough airfields.

The MiG-21 variants operated by the VPAF (F-13, PFL, PFM and MF) served with both the 921st FR and, later, the 927th FR. Although these two regiments played a major role in nurturing MiG-21 combat pilots, some of the most successful 'Fishbed' aviators had initially learned their craft flying with other units between 1966 and 1972.

A total of 13 MiG-21 pilots attained ace status with five or more aerial victories, being officially credited with a combined total of 86 kills. These men came from different generations and periods of the war. During 1966-67, the early generation, comprising Nguyen Nhat Chieu, Nguyen Ngoc Do and Nguyen Hong Nhi, became aces after six to twelve months of near-continual combat. The second generation (Nguyen Van Coc, Pham Thanh Ngan, Mai Van Cuong, Dang Ngoc Ngu, Vu Ngoc Dinh and Nguyen Dang Kinh), however, took up to 24 months, between 1966 and 1968, to down five or more aircraft. Finally, in 1972, the third generation, comprising Nguyen Duc Soat, Le Thanh Dao, Nguyen Van Nghia and Nguyen Tien Sam, achieved their five kills in just five to six months.

Five more MiG-21 pilots (Le Trong Huyen, Dong Van Song, Dinh Ton, Do Van Lanh and Pham Phu Thai) claimed four victories apiece, duly adding 20 kills to the overall total of American aircraft shot down. Aside from the myriad F-4s and F-105s credited to the North Vietnamese MiG-21 pilots, they also claimed the first F-102 Delta Dagger interceptor, EB-66 Destroyer electronic warfare (EW) aircraft and B-52 Stratofortress strategic bomber to be destroyed in aerial combat.

These achievements are still recalled today. The top MiG-21 ace, Nguyen Van Coc, is recognised as a national hero who shot down nine US aircraft, while two famous veteran 'Fishbeds' ('Red 4324' and 'Red 5121') are regarded as 'national treasures' and displayed at the People's Army Museum in Hanoi. A total of 27 MiG-21 pilots were awarded the title of Hero of the Vietnamese People's Armed Forces.

In 1965 the new, modern USAF and US Navy combat aircraft enjoyed considerable technical superiority over their counterparts in the VPAF, and their pilots arrived in-theatre with plenty of flying experience to boot. But their North Vietnamese opponents were convinced that they would have the edge in combat, despite their lack of exposure to aerial combat and the relative simplicity of their mount – then, exclusively the MiG-17. The VPAF pilots were convinced that the



intensity of their training, their response to changing tactics and their creative application of strategy would help them carry the day.

## **ACKNOWLEDGEMENTS**

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## CHAPTER ONE

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# LEARNING THE ‘BALALAIKA’

To NATO the Soviet MiG-21 supersonic interceptor was known by the reporting name ‘Fishbed’. Its pilots, though, called it the ‘Balalaika’ due to its physical resemblance to the stringed Russian musical instrument. The first MiG-21s were delivered to North Vietnam as part of a military aid package in late 1965, the initial batch of MiG-21PFL (*Izdeliye 76A* – Product 76A) ‘Fishbed-D’ fuselage components arriving at Haiphong docks between December 1965 and January 1966. Under the cover of darkness, the wooden containers were secretly transferred to canvas-covered railway wagons at Hanoi’s Yen Vien station to be loaded on to special transporters for the journey to Noi Bai airbase near Da Phuc. A second batch arrived between February 1966 and January 1967. A total of 34 fighters and four training aircraft were eventually delivered.



In July 1965 59 North Vietnamese cadets left to undertake flying training at the Soviet air force School. These fighter pilots were led by Dinh Ton (third from right, front row) and were trained initially on the L-29, before changing after their first year to the MiG-17 and MiG-21 (*István Toperczer archive*)

Pilots and engineers assigned to the MiG-21 had been sent to the Soviet Union for training as early as April 1965. MiG-17 pilots who had trained in the Soviet Union from 1961 to 1964, as well as selected 921st FR MiG-17 pilots already serving in the frontline, also commenced their MiG-21 conversion training at this time. North Vietnamese student pilots selected to fly MiG fighters had been sent to the Soviet Union for training from the early 1960s. Throughout the decade and into the early 1970s they flew a variety of types at the Krasnodar Flight Officers’ School. After an initial language course, the students embarked on the study of up to 20 theoretical subjects including aerodynamics,

meteorology, aircraft construction, weapons systems, avionics, navigation and combat tactics.



A VPAF pilot makes a solo flight in an L-29 Delfin trainer over Primorsko-Akhtarsk. The aircraft was operated by the Krasnodar Flight Officers' School in the Soviet Union, where the trainees flew a minimum of 80 hours in the Delfin, including ten hours at night, before moving on to the MiG-21 (*Gábor Békéssy*)

Their flying training started on the Yak-18, and after completing 100 flying hours they moved on to the two-seat MiG-15UTI in the second year, before graduating to the MiG-17 in the third. Students flew simple aerobatics, route flying, aerial combat and ground attack. Live gun firing exercises were conducted once or twice a year on the MiG-15UTI or MiG-17, solo or dual. Once a year students used an ejection seat simulator and twice a year made parachute jumps from an An-2. The training syllabus was changed in 1966 when L-29 Delfins replaced Yak-18s at Primorsko-Akhtarsk. Students had to complete 80 flying hours on the jets before moving on to the MiG-15UTI and MiG-17 to log a further 40 hours on each type. Future ace Nguyen Van Coc was an early graduate of the training course in the Soviet Union;

‘From the start there were 120 people in the group. After the theoretical studies there were only 60 left, with 23 qualifying as pilots. I was one of 17 who learned to fly the MiG-17.’

Returning to Vietnam in 1964, the newly graduated MiG pilots were posted to the 921st FR at Noi Bai. A year later, they were selected for the first MiG-21 conversion course in the Soviet Union. Those in the first batch accumulated about 400a500 flying hours before being exposed to combat, although flight time

was later cut to 250a300 flying hours. In the early autumn of 1966 they completed their training and returned to Vietnam for operations with the newly arrived MiG-21PFLs as members of the 921st FR. Vu Ngoc Dinh recalls the impact the training had on young pilots;

‘From the time we were little kids until we finished our pilot training we attended socialist schools where we were taught to love our country and its people. Such feelings run deep. In the Soviet Union the people were welcoming and kind to us. We were trained by excellent instructors who first taught us to become real people. They taught us how to behave towards each other, how to maintain relationships and how to deal with problems. They never forced us to do anything. In solving problems, they provided us with many options so we could choose the best. They applied this to flying training by making us think for ourselves, so we were independent in our thinking, in learning theory and in learning flying tactics and strategies.

‘On the other hand, the Russians never made concessions to Vietnamese pilots. If you missed the target you failed the exam. By contrast, the Chinese instructors were more sympathetic when it came to passing. On the whole, we got a better and more advanced education in the Soviet Union.

‘When I returned home my family didn’t know I was a pilot. They just knew that I’d been studying in the Soviet Union but didn’t know exactly what. All of our letters were sent to the General Politics Bureau to be forwarded to our families after three or four months.’

The second MiG-21 pilot training course began at the Soviet air force school in 1965, but this time the student pilots were accompanied by two groups of 300 engineers who were there for technical training. In June of that year, 60 students attended fighter pilot training under Nguyen Chinh Hau. Of these, 19 pilots, led by Pham Dinh Tuan, received instruction on the Yak-18, MiG-17 and MiG-21. The remaining 41 pilots trained on the L-29 Delfin in the first year, before progressing to the MiG-17 and MiG-21. But the growing demands of the escalating war at home meant that pilots were required as a matter of urgency. Cadets now had only three months to learn the Russian language, while their predecessors had had a year. After the first year of L-29 flying, no fewer than 39 cadets were excluded because of their poor physical condition or lack of flying aptitude. The most talented 36 progressed to the MiG-21, while 44 students remained with the MiG-17. Later, three more were also moved to the ‘Fresco’.





MiG-21PFM 'Red 80' is prepared for its next training flight at Krasnodar. Vietnamese student pilots were expected to complete at least 50 hours of flying in the MiG-21 (*Ernö Nagy*)

One of the students participating in the second course was future MiG-21 ace Nguyen Van Nghia, who recalled;

‘In September 1965 I started the first course at Primorsko-Akhtarsk, near the Sea of Azov, the city’s airfield being operated by the Krasnodar Flight Officers’ School. The first aircraft I trained on was the L-29 Delfin, which I flew alongside the Yak-18. At the completion of the first course I had 180 hours on the L-29 and had made 15 flights with the instructor before my first solo on the jet. The school then chose 24 of us from the 60 student pilots to see if we could go straight to the MiG-21 from the L-29, skipping the MiG-17. I was among those selected. Eventually, 21 of the 24 student pilots succeeded in flying the MiG-21.

‘We enjoyed a 20-day holiday in Sochi, on the Black Sea, after finishing our L-29 course. Upon our return to the flight school we started with classroom lectures on the theory behind flying the MiG-21, before going back to Primorsko-Akhtarsk for 20 more hours on the L-29. This increased my total flying time on the Delfin to 200 hours. We returned to Krasnodar for the MiG-21 flying programme, and I logged another 56 flying hours. When I’d completed my training in the Soviet Union I was able to return home with 256 flying hours in my logbook.

‘Before we returned to Vietnam, Vu Ngoc Dinh from the group of older pilots, and my commanding officer, Nguyen Hong Nhi, came to brief us on the aerial battles being fought over Vietnam so that we could practice more effectively in the remaining time we had. We didn’t have much information about the enemy.

Dinh and Nhi just told us about typical combats, and not the characteristics of the American aircraft we would be fighting.'



Tran Hanh (far right) briefs his freshly trained colleagues, who later became successful VPAF pilots and even aces, during 1966. They are, from left to right Nguyen Ngoc Do, Mai Van Cuong, Nguyen Van Minh, Pham Thanh Ngan, Nguyen Van Coc, Hoang Bieu and Nguyen Van Ly. The pilots are wearing VKK-4 high altitude compensating flightsuits and GSh-4 helmets (*Nguyen Xuan At*)

In November 1965 MiG-21 engineers returned to Vietnam to prepare for the arrival of the aircraft at Noi Bai, their work being supervised by Soviet personnel. With US bombers already regularly targeting North Vietnamese airport facilities, much of their work had to be done at night. At first it took a week to assemble a MiG-21, but the need for the new fighters became so urgent that crews worked by torchlight to build one fighter every two or three nights. These aircraft were then test-flown by Soviet pilots, enabling the 921st FR to swiftly put its first R-3S missile-armed MiG-21PFLs into operation.

The elite MiG-17 pilots who had been successful in the earlier aerial battles, namely Dao Dinh Luyen, Tran Manh, Tran Hanh and Pham Ngoc Lan, duly became unit and flight commanders within the 921st following its re-equipment with MiG-21s. These Chinese-trained MiG-17 pilots, along with Nguyen Nhat Chieu, Nguyen Ngoc Do and Le Trong Huyen, had commenced their MiG-21 conversion course with the 921st FR in Vietnam in 1966. Dao Dinh Luyen's successor as unit commander, Tran Manh, also joined the programme at this

time, as did future aces Pham Thanh Ngan, Nguyen Hong Nhi, Vu Ngoc Dinh and Nguyen Dang Kinh.

With preparations in full swing for the 'Fishbed's' combat debut from Noi Bai, the Air Defence Forces of the Vietnamese People's Air Force (ADF-VPAF) Command decided to stage a few trial engagements between the new aircraft and the MiG-17 to allow MiG-21 pilots to gain air combat experience. Furthermore, regimental commanders were instructed by the ADF-VPAF that once the 'Fishbed' was declared operational, its targets should initially be limited to enemy fighter-bombers or unmanned reconnaissance drones. Pilots were not to engage F-4 Phantom IIs or F-8 Crusaders.

## **TRAINING CONTINUES**

In 1967-68 students completed their MiG-21 training at Krasnodar with a series of examinations, culminating in live missile firing at a variety of targets. In February 1968, four of them, Dinh Ton, Pham Phu Thai, Ha Quang Hung and Luong The Phuc returned to Vietnam and combat, while the remaining 29 continued their training. This group was also the first to complete night-flying training with eight to ten hours on the L-29, followed by ten to twelve on MiG-17s and eight to ten on MiG-21s. In mid-1968 they were posted to the 921st FR and were immediately sent into battle over North Vietnam.

After three years of training there were 97 pilots (33 MiG-21-qualified and 64 MiG-17-qualified) who had graduated from Soviet and Vietnamese schools, and they returned as reinforcements to the 921st, 923rd and 910th FRs. In February 1969 a group of 44 MiG-19-trained pilots returned from China to join the 925th FR. Between 1965 and 1969 a total of 250 student pilot cadets had been sent on training courses, 130 to Soviet, 80 to Chinese and 40 to Vietnamese air force schools. In addition, 248 – 141 pilots, 33 technicians and 74 staff, political or logistic officers – were assigned to ADF-VPAF units.



Tran Manh was the commander of the 921st 'Sao Do' Fighter Regiment between 1966 and 1969. Following the MiG-21's introduction into VPAF service, he also took part in the 'Fishbed' conversion programme for MiG-17 pilots Dao Dinh Luyen, Nguyen Ngoc Do and Nguyen Nhat Chieu during 1966 (*István Toperczer archive*)

By the end of 1971 the pilots of the 921st FR were converting to the MiG-21MF 'Fishbed-J', and from early 1972 new courses were started to convert many of the existing MiG-17 pilots to the MiG-21. The 927th FR was formed at this time too, being equipped with surplus MiG-21PFMs from the 921st FR. Among its original cadre of pilots was future ace Nguyen Van Nghia, who recalled;

'From 1968 to April 1972 the Americans limited their bombing of Military District No 4 so we had plenty of time for training and could fly five or six days a week. After several months I'd accumulated close to 70 hours on the MiG-21 so that by the time I really engaged the Americans I'd logged about 1000 hours. However, my total was much more valuable than the many years' training American pilots received because we practiced in the context of the war. All the tactics and tricks used by older MiG-21 pilots were shared with us.'

In July 1972 ADF-VPAF command approved an order for further training programmes to commence. The new pilots that participated in these courses were by now undertaking most of their training on the MiG-21MF. Conversion from the MiG-17 to the MiG-21 continued. The chiefs of staff also approved a plan at this time that targeted B-52s conducting night raids. Twelve pilots,

including eight trained for night missions, were selected to carry out this dangerous mission. Anti-B-52 training flights in the MiG-21MF were conducted in bad weather, both day and night, and from short airfields. When the course ended in late 1972, all 12 pilots were ready to engage B-52s at an altitude of 10,000 m.

When US forces launched the near-overwhelming Operation *Linebacker* campaign from May 1972, survivors from the MiG-21 class of 1965 were in the vanguard of the numerous aerial battles fought by the 921st, 923rd, 925th and 927th FRs. These veteran pilots would enjoy significant success during the last American air offensive of the war, but at some considerable cost in both men and machines.

## CHAPTER TWO

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# EARLY BATTLES

On 4 March 1966 ADF-VPAF radar units reported the presence of a Firebee reconnaissance drone, and deputy regimental CO Tran Manh ordered a MiG-21PFL to readiness. At 1353 hrs a drone was sighted over the VietnamLaos border west of Quan Hoa heading for Viet Tri and Bac Can at a speed of 800 km/h. Three minutes later another appeared at Vu Ban, east of Hanoi, flying at an altitude of 5000 m and heading for the city of Thai Nguyen, in northeast Vietnam. Future ranking MiG-21 ace Nguyen Hong Nhi was scrambled and directed towards the target, which accelerated to Mach 1.7 (1800 km/h) and climbed to an altitude of 17,000 m. When Nhi was 15 km away he was ordered to switch on his aircraft's radar. At a range of three kilometres Nhi fired his first R-3S air-to-air missile (AAM) and, 1.5 seconds later, his second. He then broke away. The Firebee was destroyed about 70 km northeast of Hanoi while an altitude of 18,000 m. Its destruction represented not only Nguyen Hong Nhi's first kill but also the first aerial victory to be scored by a North Vietnamese MiG-21.



Vu Ngoc Dinh (left) and Dong Van Song (right) run to their MiG-21PFLs at Noi Bai air base. On 11 July 1966, according to VPAF records, Dong Van Song shot down the 355th TFW F-105D of Maj W L McClelland, although USAF records attributed this loss to the aircraft running out of fuel (*Nguyen Xuat At*)

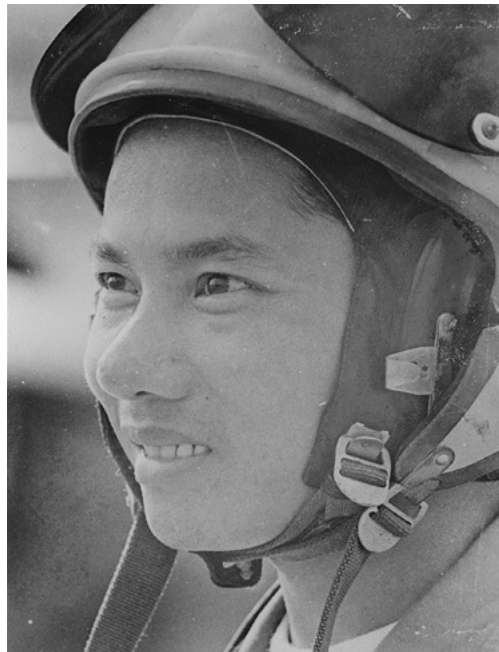
Although the VPAF had shot down an American aircraft, the MiG-21 pilots realised that an unmanned reconnaissance drone represented nothing more than an exercise. Nevertheless, the victory still had a favourable psychological effect on the North Vietnamese pilots, who now had confidence in both the fighter and its missile armament. These factors would help them remain steady and



confident when they engaged US fighter-bombers and their escorts in the months and years to come.

Several further aerial engagements followed for the 921st FR's new fighters, but no more kills were achieved. The first combat with a manned opponent came on 23 April when two MiG-21s, flown by future ace Nguyen Dang Kinh and Dong Van Song, attacked a flight of F-105s and F-4s. However, they were unable to fire their R-3Ss and S-5M air-to-ground rockets (housed in UB-16-57 pods) as they failed to achieve the correct launch parameters. The hydraulic system on Kinh's 'Red 4121' was damaged during the action and he was forced to eject from an altitude of 200 m – he landed safely in the village of Ninh Giang, in Kim Anh District. According to US records, two F-4C crews (from the 555th TFS/8th TFW) each claimed a MiG-17 kill that day. There was no mention of any MiG-21s being engaged, however.

Three days later Nguyen Hong Nhi and Dong Van Song took off from Noi Bai and attacked an F-4C of the 480th TFS/35th TFW over Bac Can, near Thai Nguyen. On this occasion the combat ended badly for the VPAF when Maj P J Gilmore and 1Lt W T Smith used a Sidewinder missile to destroy MiG-21 'Red 4028'. Nhi injured his spine when he ejected from his crippled aircraft, necessitating lengthy medical treatment before he could return to frontline flying.



On 4 March 1966 Nguyen Hong Nhi used an R-3S AAM to shoot down a Firebee reconnaissance drone at high altitude north of Hanoi to record the first aerial victory by a MiG-21 over North Vietnam. Nhi was

trained in the Soviet Union between 1961 and 1964, after which he began his service with the 921st FR. In 1972 he transferred to the 927th FR. VPAF records credit him with eight aerial victories during the war  
(*Nguyen Xuan At*)

Shortly thereafter, during a conference called by ADF-VPAF command and the 921st FR, it was pointed out that even though the unit had been well prepared and had flown numerous combat missions, its efficiency was low and, moreover, an aircraft had been lost. Combat pilots presented detailed briefings on every phase of the battles they had been involved in, together with their assessments of the enemy's tactics. During these discussions, the pilots said the primary reason for the MiG-21's lack of success was that its capabilities had not been fully exploited. Indeed, a suitable attack procedure for the Mach 2.0-capable interceptor MiG-21 had yet to be devised.

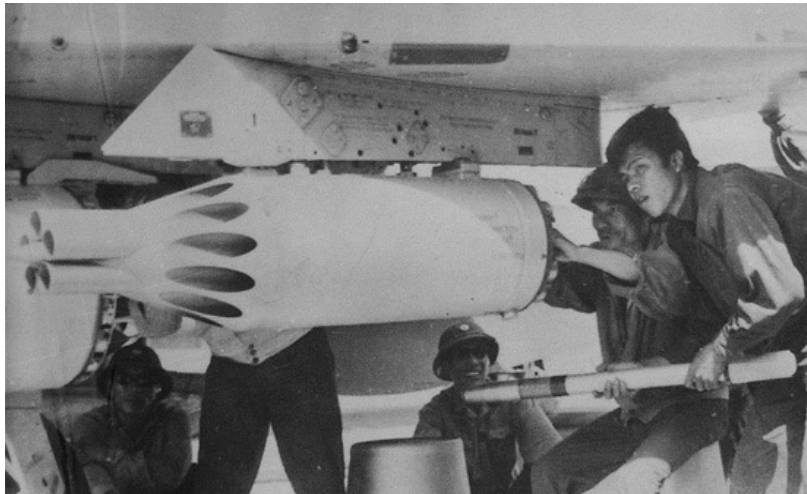
Analysis of dogfights in April–May 1966 had shown that for pilots the most difficult part of an engagement was maintaining their aim on rapidly moving targets. The MiG-21's optical sight system was used for target acquisition, with radar targeting employed only for search and range finding. This meant that the pilot had to judge the range before adopting the optimal launch position and reaching the weapon engagement zone. The ability to judge distance had still to be learned. Furthermore, some pilots continued to employ MiG-17 combat tactics, attempting to enter turning dogfights in their much-faster MiG-21s. In short, they were not yet proficient in using their aircraft's weapons – proving this point, no fewer than 14 R-3Ss had been fired during three engagements in April–May 1966, and not one had hit its target.

It was initially found that the standard pair of MiG-21s was most successful in combat when equipped with a mix of weapons. The lead aircraft, therefore, would be armed with two infrared-guided R-3Ss, while the wingman had two UB-16-57 pods containing unguided S-5M rockets. Some pilots were still doubtful as to whether or not they should use R-3Ss or rocket pods, while others even wanted the Soviet Union to supply gun-armed variants at a time when all MiG-21PFLs delivered to the ADF-VPAF lacked the optional centreline GP-9 cannon pod.

Based on such conclusions, many changes were made to MiG-21 combat procedures. ADF-VPAF command also suspended 'Fishbed' combat operations while training in the new tactics was hastily arranged. The latter included revised command and ground control, defining optimum takeoff times, selecting correct attack positions and judging the right attack speed and range for successful

missile firing. Although time was needed to allow pilots (including 13 new arrivals who returned to North Vietnam from the USSR in June) to implement these changes, the increasing tempo of US air strikes precluded this. By the early summer of 1966 American aircraft were regularly attacking targets in Hanoi, Haiphong and other military and industrial centres as part of Operation *Rolling Thunder*. But the 921st FR had lost two more MiG-21PFLs – not matched by American aerial claims – for the destruction of a solitary F-105D (flown by Capt J F Bayles of the 333rd TFS/355th TFW on 7 June). According to USAF records the jet was downed by anti-aircraft artillery (AAA), however.

By July the MiG-21 pilots were back on combat alert duty, ready to fight the next aerial battles using the new tactics. The latter initially restricted them to performing interceptions in the immediate vicinity of Noi Bai.



Armourers load a UB-16-57 rocket pod onto a MiG-21. During the air engagements of 1966 the lead 'Fishbed' in each pair was equipped with two infrared-guided R-3S AAMs, while the wingman's aircraft carried two rocket pods containing unguided high-explosive fragmentation S-5M rockets. On 7 July 1966 Nguyen Nhat Chieu's wingman, Tran Ngoc Siu shot down the 354th TFS/355th TFW F-105D of Capt J H Tomes to claim the VPAF's first aerial victory over a US aircraft using S-5M rockets. USAF loss records attributed Tomes' demise to AAA (*István Toperczer archive*)

On 7 July a pair of MiG-21PFLs flown by Nguyen Nhat Chieu (armed with R-3Ss) and Tran Ngoc Siu (rocket pods) attacked two F-105D Thunderchiefs from the 354th TFS/355th TFW. They had been detected by an ADF-VPAF radar station as they approached the Thai Nguyen area from Thailand, the MiG-21 pilots being directed to a holding area directly over Noi Bai. When the Thunderchiefs appeared from behind Tam Dao mountain at an altitude of 500 m,

Siu opened fire. The F-105 pilots made an evasive turn to the left, but one of them manoeuvred too late. Two rocket salvos fired from ranges of 500 m and 200 m hit Capt J H Tomes' jet northwest of Hanoi and the pilot ejected. Chieu was unable to achieve a lock with his R-3S on the remaining F-105, the pilot of which flew a series of vigorous manoeuvres to throw off the aim of this opponent. Tomes' Thunderchief was the first manned aircraft to be downed by a VPAF MiG-21 using unguided rockets. Official USAF loss records attributed the jet's destruction to 85 mm AAA, however.

This success showed that the MiG-21 pilots were beginning to learn lessons about battle tactics and the optimum type of weapon for aerial combat. But there was still not enough data to determine the proper tactics and attack methods for the MiG-21. This included the right way to close on a target and the correct firing techniques for missiles.

Four days later, on 11 July, USAF F-105s and F-4s were detected heading for Yen Bai–Bac Can. At 1335 hrs Vu Ngoc Dinh (whose jet was armed with R-3Ss) and Dong Van Song (his MiG-21 carrying rocket pods) took off and flew two complete circuits over Noi Bai before turning left on a heading of 310 degrees at an altitude of 2000 m. After 15 minutes Song sighted a flight of F-105s flying below him in the opposite direction. Dinh and Song made two sharp right-hand turns to put their fighters behind the Thunderchiefs and, from a range of 500 m, Song fired two volleys of rockets, which both missed. He then fired a third volley from 300 m, immediately after which the F-105 began to smoke before diving into the ground at Son Duong, in Tuyen Quang Province. USAF records stated that Maj W L McClelland of the 355th TFW had run out of fuel attempting to reach Thailand after tangling with VPAF MiGs, the pilot ejecting over Laos. The F-105 was the first of four kills credited to Dong Van Song.

The USAF swiftly exacted its revenge, however, claiming two MiG-21s destroyed north of Hanoi on 14 July by F-4Cs of the 480th TFS/35th TFW – both jets were downed with AIM-9B Sidewinders.

At this time MiG-21s were only scrambled on direct orders from the central command post, and the regimental commander could only order a take-off when danger was imminent. Once in the air, a pair of MiG-21s was separated by 50-200 m, with two pairs flying 300-700 m apart. The latter distances were subsequently changed to 500-800 m. 'Fishbed' pilots in two- or four-ship formations could only operate independently of one another after they had climbed beyond 2500 m. In the wake of these early combats, the 921st FR chose to equip all of its MiG-21s with R-3S missiles, abandoning the S-5Ms and their

UB-16-57 pods in order to increase the 'Fishbed's' manoeuvrability in aerial engagements with tight-turning American jets.

During combat it was more difficult for MiG-21 pilots to detect the launch of AIM-9 Sidewinders than for their counterparts flying the MiG-17 because of the 'Fishbed's' heavy canopy framing. In a MiG-21 pair it was the wingman's job to watch the rear hemisphere. When he sighted a missile launch, he would make a sharp turn towards and below the weapon at maximum g limits. If made in time this manoeuvre provided some protection against Sidewinders. Yet despite the introduction of improved tactics that saw a marked increase in the VPAF's combat effectiveness with the MiG-17, the same could not be said for the MiG-21. The 921st FR's fighters had participated in a handful of dogfights and claimed only three victories, whereas the 923rd had been credited with ten victories in the MiG-17 during the same period (June to September). After several discussions it was concluded that the 921st was less successful because its pilots were not yet fully familiar with the MiG-21, and because many of them were still using MiG-17 tactics when engaging the enemy. Unlike the subsonic and nimble 'Fresco', the high-speed 'Fishbed' was not suited to chasing US jets in sharp turns at low altitude.

In an attempt to improve the results being achieved by the 921st, ADF-VPAF command reiterated to the MiG-21 pilots that the 'intercept from combat air patrol [CAP]' tactic was to be adhered to. This effectively saw MiG-21s and MiG-17s flying CAP missions in regions most often used by incoming US fighter-bombers, with the 'Fresco' pilots remaining at lower altitudes (up to 1500 m), while their brethren in the 'Fishbeds' patrolled at ceilings in excess of 2500 m. It was considered that both types could operate successfully at altitudes between 1500-2500 m.



On 21 September 1966 Le Trong Huyen claimed his first aerial victory when he shot down the 357th TFS/355th TFW F-105D of Capt G L Ammon near Bac Ninh, although the USAF again attributed the loss to AAA. Huyen was trained in China between 1960 and 1964. He began his frontline service flying the MiG-17 with the 921st FR in 1964, before transitioning to the MiG-21 during 1966 in Vietnam. VPAF records credit Huyen with achieving four aerial victories during the war (*István Toperczer archive*)

Both MiG-17 and MiG-21 pilots enjoyed the advantage of operating over familiar topography, with the support of well-trained ground control intercept (GCI) units. After closely studying US bombing strikes on targets in North Vietnam during the first six months of 1966, the ADF-VPAF decided to fly MiG-21 CAPs from Noi Bai along known American routes. This resulted in many aerial battles being fought during the second half of 1966 and, finally, on 21 September, saw the 921st FR credited with its first victory in more than two months. A strike force of F-105s and F-4s was detected heading over the Yen Tu mountains on its way to attack the Dap Cau bridge in Bac Giang Province, northeast of Hanoi. The local command post ordered MiG-17s and MiG-21s to intercept, resulting in four 'Fresco-Cs' being scrambled from Kien An at 0858 hrs. Ten minutes later a pair of MiG-21s flown by Le Trong Huyen and Tran Thien Luong departed Noi Bai and circled overhead of their airfield, before being directed to a point 30 km east of Luc Nam.

At 0920 hrs Huyen and Luong were able to exploit the F-4s' preoccupation with the MiG-17s to attack Thunderchiefs heading directly towards them. In the ensuing melee, Huyen downed Capt G L Ammon's F-105D from the 357th TFS/355th TFW with an R-3S, giving him the first of his four victories. Although the USAF claimed the jet had fallen victim to AAA northeast of Hanoi, in the wake of this engagement the air force alerted its units in-theatre to the potency of the MiG-21 equipped with R-3S AAM. The USAF was correct to do so, as Huyen had in fact fired his 'Atoll' from a distance of 1500 m – the very limit of the targeting system's operational envelope – at a height of 1200 m and at a speed of 700 km/h.

During early October three MiG-21 pairs claimed three kills, the first of these being achieved on the morning of the 5th when USAF fighter-bomber formations were picked up on radar heading for the Moc Chau-Yen Bai area. Bui Dinh Kinh and Nguyen Danh Kinh (forming the attack flight), with Nguyen Nhat Chieu and Dang Ngoc Ngu in support, took off to intercept the enemy aircraft. After ten minutes the attack flight sighted four F-4Cs from the 433rd TFS/8th TFW 60 km southwest of Yen Bai. Assigned to escort two EB-66 Destroyer EW aircraft, the USAF fighters were circling at 30,000 ft when they were surprised by the MiGs' attack. Bui Dinh Kinh fired his two R-3S missiles and shot down the Phantom II of 1Lt E W Garland (who subsequently reported that his jet had been hit by an 'Atoll') and Capt W R Andrews, the latter having been totally unaware of the MiGs' presence. This was the first time an F-4 had been destroyed by an R-3S AAM.

Bui Dinh Kinh's success on 5 October not only convinced MiG-21 pilots of the soundness of the CAP tactic and the effectiveness of the R-3S, it also showed ADF-VPAF commanders and GCI personnel that the best way to direct and control 'Fishbed' interceptions was to give pilots as much time as possible to get into a favourable attack position.



Pham Thanh Ngan was flying 'Red 4128' on 9 October 1966 when his wingman, Nguyen Van Minh, used unguided S-5M rockets to shoot down the VF-154 F-4B of Lt Cdr C N Tanner and Lt R R Terry over Phu Ly. After this victory, Minh's 'Fishbed' was mortally hit by the VF-162 F-8E of Cdr R M Bellinger. This was the first MiG-21 kill scored by a US Navy fighter during the war (*Nguyen Xuat At*)

On 8 October three more USAF fighter-bomber groups were detected heading for Dong Anh. Tran Ngoc Siu and Mai Van Cuong took off from Noi Bai and spotted a flight of four F-105s east of the airfield. When Siu turned in tightly to get on the tail of the leading American aircraft, two more Thunderchiefs quickly got in behind him. Cuong duly took up position to their rear, while Siu hurriedly launched an R-3S at the F-105s ahead of him. They accelerated away from the weapon, however. When the MiGs turned back towards Noi Bai their pilots sighted four more enemy aircraft that had just bombed Dong Anh. Cuong immediately set off in pursuit and engaged an F-105 over Vinh Yen, which he claimed to have shot down for the first of his eight official victories – USAF loss records failed to corroborate his success, however.

According to the VPAF, Pham Thanh Ngan (R-3S AAMs) and Nguyen Van Minh (rocket pods) attacked enemy aircraft 45 km south of the Phu Ly railway marshalling yard – their target – the following day. Ngan was preparing to launch his R-3S when he saw Minh firing rockets from 300 m. They hit the F-4B of Lt Cdr C N Tanner and Lt R R Terry from VF-154, embarked in USS *Coral Sea* (CVA-43). The crew, who were convinced that their Phantom II had in fact been hit by a 100 mm AAA shell, ejected shortly thereafter while the jet was still flying at Mach 1.3. Minh was then ordered to break off his attack by GCI, but he did not reply. His fighter had in fact been hit by one of two Sidewinders fired by



the commanding officer of F-8E-equipped VF-162, Cdr R M Bellinger, who had been escorting A-4 bombers from USS *Oriskany* (CVA-34). Minh ejected from his MiG-21 ('Red 4221') and landed safely in Hoa Binh Province, his jet having become the first of three 'Fishbeds' that would eventually fall to the F-8 Crusader.

It appears that corroboration of Minh's kill was secured under duress according to Lt Cdr Charles Tanner, who, along with his RIO Lt Ross Terry, was captured shortly after ejecting from the fatally damaged F-4B;

'The imprisonment began with physical torture to try to obtain military information, as well as derive propaganda value from our capture. They tried to get Ross and I to say we were shot down by a MiG-21. After about eight hours of continuous torture, Ross told his interrogators that he had been shot down by a MiG. The story about being shot down by a MiG was apparently what they wanted to hear because the beating stopped immediately.'



Dong Van Song's MiG-21 was shot down by the 480th TFS/366th TFW F-4C of 1Lts W J Latham and K J Klause near Hanoi on 5 November 1966. Having trained in the Soviet Union for four years from 1962, Song began his service with the 921st FR in 1965. VPAF records credited him with achieving four aerial victories during the war (*István Toperczer archive*)

The USAF and US Navy continued to escalate the air war during the final months of 1966 by attacking targets in the Hanoi area and throughout North Vietnam. On 5 November MiG-21 pilots found themselves opposing an EB-66 Destroyer EW aircraft that was being used to jam Vietnamese search radar in an attempt to shield approaching fighter-bombers. Four F-4Cs were escorting the lone EB-66 as it flew an oval 'racetrack' pattern near the target area, the Destroyer supporting a bombing strike on targets in Route Package (RP) 6 north of Hanoi.

At 1430 hrs Bui Dinh Kinh and Dong Van Song took off from Noi Bai and sighted the EW aircraft and its escorts at a range of ten kilometres. Ignoring the Phantom IIs, Kinh fired an R-3S at the EB-66 but missed when the pilot of the latter machine threw his aircraft into a diving spiral. The Destroyer then disappeared into cloud cover at an altitude of 3000 m, and when it emerged Kinh turned towards it in order carry out a follow-up attack. His MiG-21 then became virtually uncontrollable, and Kinh realised that 'Red 4022' had been hit by a missile. He quickly ejected. His assailant had been the F-4C of Maj J E Tuck and 1Lt J J Rabeni of the 480th TFS/366th TFW, the crew having used an AIM-7E Sparrow to down the MiG-21. They had in turn been targeted by Song, who, having manoeuvred in behind the Phantom II, was just about to fire an R-3S when his 'Red 4026' was also hit by a missile (an AIM-9B) fired from the F-4C of 1Lts W J Latham and K J Klaus. He too ejected and landed safely – Song would ultimately be shot down three times in 1966-67, ejecting successfully on each occasion.

During the post-engagement debriefing the MiG-21 pilots admitted they had been too eager to attack the EB-66 and had not kept a close enough watch on the F-4s behind them. The cooperation between the two pilots had been inadequate and Kinh had not looked behind him properly prior to firing his missile and commencing a break-away manoeuvre.

Between 2 and 24 December American jets flew 280 bombing missions over North Vietnam, their main targets being in the Hanoi area. They included the Yen Vien, Van Dien and Gia Lam railway marshalling yards and Noi Bai and Kep airfields. The MiG-21 pilots participated in eight aerial battles during this period and claimed to have shot down nine USAF aircraft. The first clash, on the 2nd, took place when Noi Bai's fuel farm was attacked by F-4s and F-105s. Two MiG-21 pairs, comprising Vu Ngoc Dinh and Nghiem Dinh Hieu and Le Trong Huyen and Tran Thien Luong, were scrambled. Future ace Vu Ngoc Dinh subsequently recalled;

‘I ordered the other pilots to drop their auxiliary fuel tanks and speed in to attack. We split into two sections and, turning inside the enemy aircraft, I managed to get on the tails of the F-105 bombers. My wingman fired a missile at one but the range was too great and it missed. Meanwhile, Huyen was chasing another. After one complete circle in a turning dogfight, he fired an R-3S AAM at a Thunderchief from a range of 1200 m, scoring a kill [Huyen’s second]. His wingman, Luong, wasn’t able to fire his UB rocket pods because the range was too great.’

The USAF claimed that Capt M L Moorberg’s F-105D (from the 34th TFS/388th TFW) had been shot down by 37 mm AAA fire. Two F-4Cs from the 366th TFW’s 480th and 389th TFSs were also destroyed during the Noi Bai attack, these being claimed by the 921st FR but credited to SA-2 SAMs by the USAF.

On 4 December four MiG-21 pairs (comprising Dong Van De and Nguyen Van Coc, Nguyen Ngoc Do and Pham Thanh Ngan, Tran Ngoc Siu and Mai Van Cuong, and Hoang Bieu and Dang Ngoc Ngu) were on combat alert duty at Noi Bai. Each flight leader’s aircraft was armed with R-3Ss, while the wingmen’s jets were equipped with rocket pods – the MiG-21s assigned to Bieu and Ngu had R-3Ss, however. They engaged USAF aircraft over Noi Bai, firing a total of five AAMs and 64 rockets. Although no enemy aircraft were shot down, the USAF crews were forced to jettison their bombs prior to reaching their target in order to make good their escape.

Up until this particular interception, the tactics employed by the 921st FR had seen its pilots remain in the vicinity of Noi Bai and commit to intercepts only when American aircraft intruded into their particular airspace. However, Soviet advisors had recommended that intercept areas be moved away from the intended target, which in turn meant that a US strike package would still be in close formation when VPAF fighters found it. Just such an engagement also took place on 5 December.

Three MiG-21 pairs were on combat alert duty at Noi Bai when a 24-strong formation of F-4s and F-105s was detected approaching from Thailand. At 0855 hrs Nguyen Dang Kinh and Bui Duc Nhu took off and were told to head to a holding pattern over Son Duong, some 35 km away, and await the arrival of the Thunderchiefs. After flying one complete circuit at an altitude of 3000 m, they sighted the F-105s flying in extended trail formation. At 0902 hrs Kinh attacked the lead flight, firing an R-3S missile, which hit the jet of Maj B N Begley – the aircraft’s demise gave future ace Kinh his first manned aerial success (he had

downed a Firebee on 21 July). The USAF claimed that the F-105D, of the 421st TFS/388th TFW, had been lost to gunfire from a MiG-17.

That same afternoon another group of F-105s was detected over North Vietnam. Two MiG-21 pairs, comprising Le Trong Huyen and Tran Thien Luong and Vu Ngoc Dinh and Nghiem Dinh Hieu, took off and were directed to intercept over the Vinh Yen-Dai Tu-Doan Hung area. Vu Ngoc Dinh recalled the subsequent engagement;

‘We were flying along the Tam Dao mountains when I saw four black spots flying past 90 degrees off my cockpit. I immediately reported it to the command post, which ordered us to attack. I got on an F-105’s tail and tried to get closer. I then pulled up and saw another F-105. I chased it and fired my missile at it. I saw the missile hit the jet’s tail and it was trailing smoke. We returned and landed safely. It was my first victory, and I had only 23 flying hours as a second lieutenant on MiG-21s.’

USAF records did not confirm this loss, however.

The MiG-21s continued to score during December using the tactic of intercepting targets at long range, attacking from the same altitude and firing R-3S missiles. ADF-VPAF command ordered that enemy aircraft be attacked from even longer ranges to disrupt their strikes on the outer perimeter of the North Vietnamese defences.

On 14 December eight MiG-21s in two flights, comprising Nguyen Nhat Chieu, Dang Ngoc Ngu, Dong Van De and Nguyen Van Coc and Pham Thanh Ngan, Hoang Bieu, Tran Ngoc Siu and Mai Van Cuong, were on combat alert duty at Noi Bai. As with all MiG-21 flights, the second and fourth aircraft were equipped with rocket pods. The first flight took off at 1455 hrs, before being directed to a holding area over the Hoa Binh-Van Yen area. After making three complete circuits over the area, the ‘Fishbed’ pilot spotted 20 F-105s flying near the northern slopes of the Tam Dao mountains, heading for Hanoi. The MiG-21s attacked.

Covered by Chieu, Ngu got on the tail of the F-105s, forcing the attackers to drop their bombs in order to accelerate and turn away. Chieu and Ngu continued the pursuit until the GCI command post ordered the MiG pilots to turn back. Two more F-105 flights were then detected, and Chieu was chasing one when Ngu called on him to turn sharply. Chieu banked violently to the right and an F-105 flashed past the upturned belly of his aircraft. He gave chase and fired an R-3S, but it failed to guide. Meanwhile, future ace Ngu shot down an F-105,

although its loss was not confirmed by USAF sources. This was his first manned victory, as he had previously downed a Firebee on 13 August.

While Chieu and Ngu were busy with their F-105s, De and Coc turned to pursue a fourth Thunderchief flight. The USAF pilots soon spotted the MiGs behind them and jettisoned their bombs. They then turned away to make good their escape and the MiGs also broke off the pursuit. It was during their return flight that De and Coc sighted four more enemy aircraft ahead of them. De fired an R-3S, which exploded under the tail of an F-105. Seeing another Thunderchief flying directly in front of him, he fired his second missile. Breaking off, he saw a white parachute below. According to USAF records, only Capt R B Cooley's 357th TFS/355th TFW F-105D was shot down that day – its demise was credited to De.

That same afternoon ADF-VPAF radar detected a Firebee approaching, and the second flight again took off from Noi Bai to find the target just four kilometres away. Pursuing the drone, Bieu fired a volley of rockets without any result, before future ace Ngan achieved his first aerial success when he hit it with two R-3Ss.

The year's final MiG-21 action came on 19 December when the USAF despatched bombers to attack Vinh Yen and Noi Bai. Nguyen Hong Nhi, Nguyen Dang Kinh, Vu Ngoc Dinh and Nghiem Dinh Hieu took off to intercept the F-105s and sighted them at a distance of 12 km. Dinh chased one and shot it down with an R-3S missile for his second victory, although USAF sources failed to confirm the loss.



Future ace Vu Ngoc Dinh claimed his first aerial victory on 5 December 1966. Another kill followed exactly two weeks later. According to VPAF records, his victims on both occasions were F-105 Thunderchiefs, although neither claim was corroborated by USAF loss records. Dinh trained to fly the MiG-17 between 1962 and 1964, before converting to the MiG-21 in the Soviet Union in 1965/66. His service with the 921st FR began in 1964, and VPAF records credit him with six aerial victories during the war  
(*Nguyen Xuan At*)

During the December battles the MiG-21 pilots had become convinced of the R-3S AAMs' effectiveness, although they were fully aware that to achieve success with the weapon they had to take their targets by surprise. This meant mounting a visual-only search for the enemy aircraft, and once it was located the attacker had to stay in the enemy jet's radar 'blind-spot'. Most of the time 'Atoll' missiles would be launched from a distance of 1200-2500 m – Soviet instructors believed that 1500 m was optimal. Immediately after firing his AAM, the Vietnamese pilot would roll away and remain at low level all the way back to Noi Bai.

However, the hunter often became the hunted, and because of the 'Fishbed's' heavily framed canopy, detecting an AIM-7 or AIM-9 AAM being launched was considerably more difficult for MiG-21 pilots than those flying the MiG-17. It was the job of the MiG-21 wingman to watch both his back and that of his flight leader, and if he spotted a missile closing on either of them he would yell out a

warning so they could perform a high-g turn into and below the round. This manoeuvre would usually break the lock of the AIM-9's infrared seeker head on the MiG-21's tailpipe.

In 1966 the VPAF flew 623 combat sorties and engaged in 196 aerial battles, the latter resulting in claims being made for the destruction of 54 American aircraft. MiG-21 pilots were credited with shooting down 20 of them, although US records put the total at just four. VPAF records note the loss of seven MiG-21s, six pilots of which ejected from their stricken aircraft and survived. There was just one fatality.

While fighting these engagements, the 921st FR intensified its training syllabus, with night as well as day flying and more MiG-21 pilot conversions. The main training syllabus comprised simple VMC (visual meteorological conditions) flights as well as more complex IMC (instrument meteorological conditions) flights at both low and high altitudes and in two- and four-ship formations. Nocturnal flights were made on 65 nights during this period. By the end of the year most pilots were competent to fight down to 150 m and above 18,000 m, and both above and below clouds. They were also able to engage the enemy at both short and long range, and to conduct interception in two- or four-ship formations.

That year the 921st FR had flown 2024 combat sorties totalling 1024 flying hours, with flights taking place on 148 days – 39 of these saw flying undertaken in IMC conditions. The average per pilot was 107 combat sorties totalling a modest 47 hours.

## CHAPTER THREE

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# THE CROWDED SKY

US aircraft continued to attack power plants, industrial sites, transport infrastructure and military locations in the Hanoi and Haiphong areas throughout the dry season of 1967. They also hit defence locations in Viet Tri, Thai Nguyen and Quang Ninh provinces as they attempted to isolate Hanoi from Haiphong and the two cities from other regions of the country. Attacks on MiG bases also limited the VPAF's operational capabilities. As it attempted to make the best use of its small fighter force, the VPAF concentrated on the defence of Hanoi. Although MiG-21s had already been introduced into the conflict, the major share of the fighting was still being borne by the well-tried MiG-17. Combining both types and using their capabilities to the full was of paramount importance.



Le Trong Huyen uses models to brief (left to right) Nguyen Ngoc Do, Bui Duc Nhu, Nguyen Duc Thuan and Nguyen Dang Kinh. All four pilots would be shot down by 8th TFW F-4C Phantom IIs during Operation *Bolo* on 2 January 1967. The pilots are wearing ZSh-3M-type helmets (*István Toperczer archive*)

The new year started badly for the VPAF. On 2 January 1967 five MiG-21s were shot down (the USAF claimed seven destroyed) over Noi Bai, although all the pilots involved managed to eject safely. At noon a strike formation – part of Operation *Bolo* – flew into North Vietnamese airspace led by the redoubtable World War 2 ace Col Robin Olds, CO of the 8th TFW. The F-4Cs assigned to this special MiG-baiting mission flew along the northern corridor of Route Package (RP) 6 at the same altitude and speed as F-105 bombers. And like the Thunderchiefs they were trying to mimic, each jet carried an electronic jamming pod in an attempt to fool Vietnamese radar operators. Unlike the F-105s, the Phantom IIs were exclusively armed with AAMs.

Some of the F-4s flew in formation towards Noi Bai while another group headed at low altitude for a holding position north of the Tam Dao mountains. The Noi Bai and Kep MiGs were at full combat alert. Cloud density was 10/10ths, with the base at 1500 m and the top at 3000 m. The central command post prevented the MiGs from taking off until the intruders were just 40 km from Noi Bai, and by this time two flights of US fighters were waiting above the clouds. At 1356 hrs the first MiG flight, comprising Vu Ngoc Dinh, Nguyen Duc Thuan, Nguyen Dang Kinh and Bui Duc Nhu, took off. They quickly encountered four F-4s over Phu Ninh. Dinh set off in pursuit, but when the Phantom II crews reacted aggressively he turned away. Then he saw that two of the F-4s behind him had fired missiles at his MiG-21. It was too late for evasive action and Dinh's aircraft ('Red 4222') was hit by an AIM-7E fired by 1Lts R F Wetterhahn and J K Sharp. The MiG quickly became uncontrollable but Dinh ejected safely – the first of the ace's three ejections during the conflict.

Meanwhile, Kinh joined up with Thuan and Nhu in chasing a flight of F-4s flying below them. Four of the enemy aircraft increased speed and fled, but Kinh sighted Olds' flight lying in wait above the cloud layer surrounding the Tam Dao mountains. When the group of F-4s had manoeuvred into an attack position, Olds (and his WSO 1Lt C C Clifton) launched two Sparrow missiles and one Sidewinder at the MiG-21s. Kinh asked Thuan and Nhu for their current locations but received no reply. He then realised his aircraft ('Red 4126') had been hit and he decided to eject – his second of three ejections.

Thuan and Nhu had become separated from the Dinh-Kinh pair and were soon embroiled in a dogfight of their own with the F-4s. The Phantom II crews fired so many missiles that both MiGs ('Red 4125' and 'Red 4225') were hit. Thuan and Nhu also ejected safely. They had been shot down by the 555th TFS/8th TFW crews of Capt W S Radecker and 1Lt J E Murray and Capt T Raspberry and 1Lt R W Western.

A similar fate would befall the leader of the second MiG-21 formation. At 1355 hrs Nguyen Ngoc Do, Dang Ngoc Ngu, Dong Van De and Nguyen Van Coc also took off from Noi Bai. After breaking through the clouds at an altitude of 3000 m, Do and De sighted enemy aircraft and turned left. After making one complete circuit, Do saw an F-4 fire two missiles at their MiGs. Do pursued the two leading Phantom IIs, firing one missile at them. Moments later Do felt his MiG ('Red 4029') become unstable, go into a side-slip and then drop into a spin. His assailant had been the F-4C of 433rd TFS/8th TFW crew Capt J B Stone and 1Lt C P Dunnegan, who had hit the MiG-21 with an AIM-7E. Do ejected safely,

while the remaining three 'Fishbed' pilots broke off the engagement and returned to Noi Bai.

Vu Ngoc Dinh stated that the ADF-VPAF had failed to realise that the Americans were about to organise a 'sweep-the-sky' campaign aimed at neutralising the growing threat posed by the 921st FR. He recalled;

'We were completely shocked. Our command didn't realise what was happening. They [the Americans] studied the weather and the cloud cover above Noi Bai. They sent about 90 fighters disguised as fighter-bombers, which they divided into two groups. And they jammed everywhere they appeared, which made the whole sky become dark so that we could see nothing on the radar. When they were over Noi Bai disguised as fighter-bombers our radar detected them and then two flights of eight MiGs were ordered to take off. I was in the first, which consisted of me, Thuan, Kinh and Nhu. We flew through cloud that went from 3000 m down to 300 m. When we came out of the cloud we encountered F-4 Phantom IIs that were waiting for us, and five of us were shot down. I felt so angry and indignant.

'After that combat I was on standby in the afternoon instead of going to the hospital. Of the five pilots who had ejected, I was the only one fit enough to be on standby. The rest had had to be hospitalised. The next day, when I was being examined in the hospital, our commander, Phung The Tai, visited me and said: "It was our mistake", and then he left. The fact that a commander dared to admit his mistake made us respect and believe him. After this meeting, I felt reassured. In the afternoon I was on standby again.'

Four days later, on 6 January, the VPAF lost two more MiG-21s to the 555th TFS/8th TFW. At 0924 hrs, four fighters flown by Tran Hanh, Mai Van Cuong, Dong Van De and Nguyen Van Coc took off from Noi Bai. Coc then sighted enemy aircraft pursuing them and realised they were in an unfavourable position. The MiG-21 pilots banked sharply right, and after turning 15 degrees Hanh spotted four more F-4s. He also saw six missile smoke trails heading for them. Two Phantom II crews had locked on to De's MiG-21, with the result that the AIM-7 missile fired by Capt R M Pascoe and 1Lt N E Wells hit its target – 'Red 4025' burst into flames. De ejected but did not survive.

Meanwhile, Tran Hanh continued his right turn and saw four F-4s in front of him. He pursued the leading Phantom II and launched an R-3S, but without observing any result. At that moment, Coc was chasing the F-4 wingman as another Phantom II fired three AIM-9s at his MiG. He took evasive action and was able to avoid them. Cuong was not so fortunate. Flying back through the

clouds, his MiG-21 ('Red 4023') was hit by an AIM-7 missile fired by Maj T M Hirsch and 1Lt R J Strasswimmer. Cuong quickly realised that his aircraft was unflyable and decided to eject (his first of two ejections in 1967). He landed safely. While this was happening, Hanh and Coc were ordered to return home. They broke out below the cloud layer and landed safely at Noi Bai.

Seven MiG-21s had now been lost in just two aerial battles, and not a single enemy aircraft had been claimed in return. The VPAF high command immediately suspended all combat operations by the 921st FR and ordered that fighter tactics were to be thoroughly reviewed. Additional training was also conducted, with pilots drilled on revised tactics that involved hit-and-run guerrilla-style attacks using groups of two or four aircraft, with the attacking group's altitude and speed constantly changing. It was also decided that the MiG-21 pilots should strike enemy formations from above while their counterparts in MiG-17s engaged the American fighter-bombers from the same altitude – preferably from either flank. This, it was hoped, would force the intruders into a turning dogfight.

The implementation of these tactics would have to wait a while, however, as the badly mauled 921st was withdrawn from combat for several months in an attempt to make good its losses.

In an effort to boost the VPAF's fighter ranks as quickly as possible the Vietnamese Central Military Party Committee led by Gen Vo Nguyen Giap accepted the offer of a North Korean air force regiment of 'volunteers' to fly MiG-17s and MiG-21s against the Americans. The unit was stationed at Kep air base between February 1967 and 1969 under its CO, Lt Col Kim Chang Xon. The unit was designated 'Doan (group) Z', and its achievements are recalled here by Vu Ngoc Dinh, who occasionally flew alongside the North Korean pilots;

'The agreement was signed by the two governments but we didn't know anything about it. I did know that North Korea wanted to send pilots to Vietnam so that they could practice and gain experience with the aim of building its air force. The pilots were their best ones, whose parents or relatives were working for the Politburo of the North Korean Central Party Committee. One of them was the son of Thoi Huu Kien, chairman of [the] North Korean National Assembly at the time.

'They sent their pilots and commanders to Vietnam and we provided the hardware they required during their service. They kept everything secret so we didn't know their loss ratio, but the North Korean pilots claimed 26 American

aircraft destroyed. Although they fought very bravely in the aerial battles, they were generally too slow and too mechanical in their reactions when engaged, which is why so many of them were shot down by the Americans. They never followed flight instructions and regulations either. In many cases I myself provided MiG-21s for the North Korean pilots to fly into combat. They claimed four aerial victories with the MiG-21.'



Groundcrew prepare MiG-21s for their next mission. The North Vietnamese agreed to provide 'Fishbeds' and all necessary technical equipment, together with maintenance and logistical support, for the North Korean volunteers serving with 'Doan Z'. According to VPAF records, North Korean pilots operated MiG-21F-13s alongside Kep-based MiG-17s. While flying 'Fishbeds', they claimed four aerial victories (A-4E, F-105F and two F-4s) between May 1967 and February 1968 (*Nguyen Xuan At*)

On 24 March 1967, by order 014/QD GP, Giap established a number of ADF-VPAF missile and radar units. The VPAF's structure also changed, with the 371st 'Thang Long' Air Division being established to control the 921st and 923rd FRs and the 919th Air Transport Regiment as well as the airfields at Gia Lam, Noi Bai, Kep, Hoa Lac, Kien An, Tho Xuan and Vinh. Although the VPAF's main aim remained the defence of Hanoi and the dyke system around the Red River, it lacked sufficient pilots to respond to all incursions, and did so only when key targets were at risk. At that time the VPAF had a complement of 64 fighter pilots, 1685 engineers and 1024 ground controllers.

It was not until 23 April, more than three months after Operation *Bolo*, that the 921st FR engaged enemy aircraft once again. Two MiG-21 pairs were scrambled to intercept an F-105 strike package heading for Thai Nguyen, 'Fishbed' pilots Nguyen Dang Kinh and Tran Thien Luong turning in behind the Thunderchiefs just as the 389th TFS/366th TFW F-4C Phantom II of Maj R D Anderson and Capt F D Kjer arrived on the scene and promptly shot down Kinh's 'Red 4223'. The future ace duly ejected for the third time. Three days later another MiG-21 was claimed by Maj R W Moore and 1Lt J F Sears, again from the 389th TFS/366th TFW, while defending *Iron Hand* anti-SAM F-105s that were in turn supporting an attack on Hanoi. According to USAF records, Moore and Sears launched an AIM-7 AAM at Tran Thien Luong's MiG-21, which was damaged when the weapon exploded. He ejected at a height of just 100 m and was killed when his parachute failed to fully deploy before he hit the ground. VPAF records note that the MiG-21 lost that day had been mistakenly attacked by a MiG-17.



Mai Van Cuong used R-3S missiles to shoot down the 44th TFS/388th TFW F-105D of Capt F A Caras east of Na San on 28 April 1967. Cuong was among a group of VPAF MiG pilots trained to fly the MiG-17 between 1961 and 1964, before converting onto the MiG-21 in the Soviet Union in 1965/66. He began his service with the 921st FR in 1964, and VPAF records credited him with eight aerial victories during the war

(*Nguyen Xuan At*)

On 28 April Dang Ngoc Ngu and Mai Van Cuong took off in their MiG-21s and flew along the northern slopes of the Tam Dao mountains. When they were 15 km north of Son Duong they turned left to intercept F-105s leaving Vietnamese airspace after their attack on a railway repair workshop in Hanoi. Ngu sighted targets four kilometres ahead of his aircraft and accelerated in pursuit. He fired an R-3S, but it missed. Cuong, meanwhile, got on the tail of another F-105 and launched an R-3S that shot down Capt F A Caras' F-105D Thunderchief (from the 44th TFS/388th TFW) 30 km east of Na San.

On 30 April, after a number of USAF attacks on targets in the Hanoi area, VPAF Headquarters ordered two 921st FR MiG-21s aloft from Noi Bai to intercept yet another incoming strike. At 1313 hrs Le Trong Huyen and Vu Ngoc Dinh took off and encountered four USAF aircraft over the Tuyen Quang area, but neither side was able to get close enough to open fire. At 1401 hrs an EB-66 was detected crossing the Laotian border into Vietnamese airspace. Another MiG-21 pair, flown by Nguyen Hong Nhi and Dong Van Song, took off to engage it, but the pilots failed to make visual contact with the target. At 1450 hrs USAF aircraft were detected heading for the Yen Phu electrical power plant in Hanoi and future high-scoring aces Nguyen Ngoc Do and Nguyen Van Coc were ordered to intercept. Coc soon spotted the F-105s and Do ordered him to cover him during his attack. The former subsequently recalled;

'I took off for the mission as Do's wingman. At an altitude of 2500 m I noticed [ten] F-105s flying beneath us at 30 degrees to our course. My leader also saw the Thunderchiefs. We both increased speed and dived towards the American fighter-bombers, which were unaware of our presence. My leader shot down the second aircraft in a group of four F-105s. Until now I had been protecting him, but when an F-105 filled my sights I also opened fire, downing another Thunderchief. We were then ordered to return to base, where we made a successful landing, while the eight surviving F-105s dropped their bombs early and started a search for the ejected pilots.'

Nguyen Ngoc Do had shot down the 357th TFS/355th TFW F-105F flown by Maj L K Thorsness and Capt H E Johnson, while Coc's victim was 1Lt R A Abbott's 354th TFS/355th TFW F-105D. After the jets went down, US search and rescue (SAR) aircraft were immediately deployed. The strike formation aborted the bombing mission and concentrated the entire strike formation on the rescue effort. While awaiting the SAR aircraft, two remaining 333rd TFS/355th TFW F-105Ds were running low on fuel. As they were heading for the aerial refuelling area, they were attacked by the MiG-21s flown by Le Trong Huyen

and Vu Ngoc Dinh – they had been ordered to scramble at 1629 hrs. The two USAF aircraft were taken by surprise and both were hit by ‘Atoll’ AAMs, with Capt J S Abbott being forced to eject (giving Huyen his third F-105 kill). Maj A Lenski managed to nurse his badly damaged Thunderchief back to Udorn Royal Thai Air Force Base, however, where he made a successful landing.



Since no airfield cleaning machinery was available, the VPAF had to resort to brooms to keep its taxiways clear of debris. Nguyen Ngoc Do was flying MiG-21PFL ‘Red 4227’ when he shot down the 357th TFS/355th TFW F-105F of Maj L K Thorsness and Capt H E Johnson south of Yen Bai on 30 April 1967  
(*Nguyen Xuan At*)

The unsuccessful engagements of January had been followed by a long suspension of operations. These victories on 28 and 30 April confirmed that the best tactic for 921st pilots to employ was to surprise the enemy after closing from long range. This allowed them to gain a favourable attack position thanks to their significant speed advantage, getting in close and accurately firing their AAMs or rocket pods before quickly breaking off the interception and diving away to safety.





Pham Thanh Ngan (left) and Nguyen Van Coc (right) were ordered to intercept F-105s and F-4s in the Nghia Lo-Tam Dao area on 4 May 1967. Ngan claimed a Thunderchief during the engagement, although its loss was not confirmed by USAF sources. Coc's MiG was in turn shot down by the 8th TFW CO Col R Olds and 1Lt W D Lafever. He ejected safely (*Nguyen Xuan At*)

In May the Americans continued their offensive against targets in Hanoi, to which the VPAF responded by flying 30 to 40 sorties a day. However, the 921st lost another MiG-21 on the 4th when Nguyen Van Coc was forced to eject from 'Red 4325' after being engaged by 8th TFW CO Col Robin Olds and 1Lt W D Lafever. Coc recalled what happened;

'I took off from Noi Bai with my leader, Pham Thanh Ngan. The enemy strike package was heading for Tam Dao ridge. We were flying at 350 degrees to it at an altitude of 2000 m. We discovered 12 F-105s in three flights and eight F-4s at a distance of seven kilometres. Ngan increased speed and attacked an F-105 on his left with an R-3S. He sighted three more Thunderchiefs and fired another missile at a distance of 1200 m. I didn't see any hit and Ngan broke off to land. I discovered four F-4s on my left and attacked them, but I soon heard a big detonation behind my MiG's tailpipe. I'd been hit by an F-4 and had to return to Noi Bai. When my speed was 360 km/h I turned the gear control lever to "out". At an altitude of 100 m my speed was just 260 km/h, so I ejected safely. My MiG crashed 500 m from the Noi Bai runway.'

Fellow future ace Pham Thanh Ngan enjoyed better luck that day when he claimed an F-105 destroyed, although no USAF aircraft were lost on 4 May

according to official records.

No fewer than three Thunderchiefs were downed the following day, however, with Nguyen Ngoc Do being credited with the destruction of 1Lt J R Shively's 357th TFS/355th TFW F-105D for his second victory. USAF records state that the aircraft, which was part of a flak suppression flight for an attack on the railway marshalling yard at Yen Vien, had fallen to AAA fire over Hanoi. On 12 May the MiG-21 pair of Le Trong Huyen and Dong Van Song achieved further success when they shared in the destruction of a 357th TFS/355th TFW F-105D near Yen Bai, in Nghia Lo Province. Again, the USAF listed Capt E W Grenzebach's Thunderchief as having been lost to ground fire.



Nguyen Ngoc Do claimed to have shot down 1Lt J R Shively's F-105D from the 357th TFS/355th TFW over Hanoi on 5 May 1967, although the USAF attributed the loss to AAA. Do was in the first group of VPAF MiG pilots trained to fly the MiG-17 in China between 1956 and 1964. He then served with the 921st FR from 1964 and took part in the MiG-21 conversion programme in Vietnam during 1966. VPAF records credited him with six aerial victories during the war (*Nguyen Xuan At*)

The USAF also suffered at the hands of the MiG-21s on the 20th. F-4Cs from the 433rd TFS/8th TFW were flying a MiGCAP mission for the Takhli-based F-

105 strike force that was targeting the Bac Le railway marshalling yard when the escort fighters engaged 12 to 14 MiG-17s from 'Doan Z' – four of the latter fell to the Phantom IIs.

As the F-4s and F-105s pressed on to their target, two MiG-21 pairs from the 921st FR also attempted to attack them. At 1516 hrs Nguyen Nhat Chieu and Pham Thanh Ngan, joined four minutes later by Vu Ngoc Dinh and Nghiem Dinh Hieu, took off from Noi Bai and headed for Tam Dao. Detecting enemy aircraft on their left at a distance of eight kilometres, Chieu increased speed and fired an R-3S missile, but no result was observed. When Ngan warned him of enemy aircraft behind, Chieu performed a series of evasive manoeuvres before spotting four Phantom IIs above him. Climbing to 3500 m, he fired another R-3S and shot down the F-4C of Maj J L Loan and 1Lt J E Milligan – this was Chieu's second victory, his first having been claimed in a MiG-17 on 20 September 1965.

At the same time the remaining MiG-21 pair was flying 15-20 km behind Chieu and Ngan. Vu Ngoc Dinh recalled the subsequent battle that took place;

'I spotted four F-4s and requested permission to attack, but the command post refused to permit me into our AAA unit's firing area. We joined up with Chieu to form a three-aircraft formation, and when I flipped my aircraft onto its left side to scan the area I saw four F-4s pursuing us. I shouted to Hieu to take immediate evasive action, then two missiles exploded on the right-hand side of my aircraft. I made quick evasive manoeuvres and climbed to 7000 m. When I levelled out to change course I saw two more F-4s flash over my head. I found that my aircraft was difficult to control, the hydraulic system having been seriously damaged, As I began to spiral downwards there was a lot of smoke in the cockpit so I decided to eject. I lost consciousness for a time and my parachute lines became tangled. I untangled the lines so the 'chute could open properly, and landed in Thanh Van Village in Bac Thai Province.'

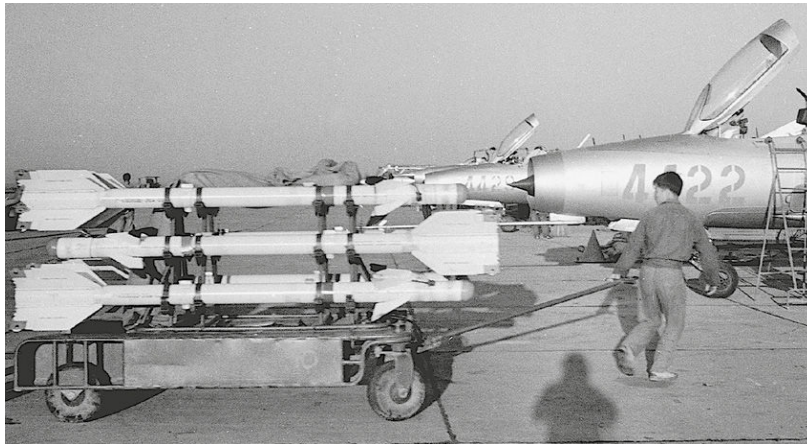
It was an AIM-9 fired by Maj R D Janca and 1Lt W E Roberts of the 389th TFS/366th TFW that had downed Dinh's MiG-21 ('Red 4321').

Meanwhile, Hieu pulled up hard to the left and then sighted yet another pair of F-4s. He fired a missile at one and quickly broke off the engagement. At that moment Hieu's aircraft ('Red 4024') was hit by a Sparrow missile fired by Lt Col R E Titus and 1Lt M Zimer, also of the 389th TFS/366th TFW. Hieu ejected but died on his way to hospital.



Nghiem Dinh Hieu (left) discusses the details of the next sortie with Vu Ngoc Dinh (right) on 20 May 1967. Both were to be shot down by USAF F-4Cs later that day. Dinh ejected safely but was injured, while Hieu died on his way to hospital (*István Toperczer archive*)

On 22 May four MiG-21s were scrambled to intercept enemy aircraft over the Tuyen Quang–Phu Tho area. Tran Ngoc Siu and Dang Ngoc Ngu had taken off at 1452 hrs, with Vu Ngoc Dinh and Nguyen Dang Kinh following four minutes later. Dinh was back on duty just 48 hours after his recent ejection, even though he had passed out while leaving his stricken aircraft. Siu and Ngu sighted four F-105s on their left over Hoa Binh and fired R-3Ss, but did not claim any kills. As the pair continued to pursue the Thunderchiefs, Siu in turn spotted four F-4Cs following them. Quickly realising he was at a tactical disadvantage, Siu broke off the pursuit and returned to Noi Bai.



Armourers load R-3S missiles onto an ex-Cuban MiG-21F-13 (*Izdeliye 74*) 'Fishbed-C' at Noi Bai. The first batch of this variant began arriving in Vietnam in June 1967 and, after assembly, were in combat-ready condition by July. The MiG-21F-13 was equipped with one NR-30 cannon, with 30 rounds of ammunition, mounted on the starboard side of the fuselage to provide additional firepower to the R-3S AAMs slung from underwing hardpoints (*Nguyen Xuan At*)

Ngu, however, chased after four more F-105s that he had seen, climbing to a height of 7000 m. While trying to get above the fighter-bombers, he spotted their Phantom II escorts. Closing on them undetected, Ngu fired an R-3S missile and downed the 497th TFS/8th TFW F-4C of Capt E L Perrine and 1Lt K F Backus near Cao Nung. The USAF stated that the aircraft had fallen to AAA fire near Kep.

That May US forces had lost 85 aircraft, of which 34 were claimed by SAM batteries, 32 by AAA and 19 by the VPAF. Between 24 April and 25 May VPAF fighters had flown 469 sorties, taken part in 34 dogfights and broken up 222 bombing strikes.

To make good the losses suffered by the 921st FR in just over a year of combat operations, the Soviet Union supplied North Vietnam with a shipment of ex-Cuban MiG-21F-13 (*Izdeliye 74*) 'Fishbed-Cs'. This variant was armed with R-3S missiles and NR-30 cannon, but only SRD-5M Kvant semi-active radar-ranging equipment – the more advanced MiG-21PF boasted the RP-21 Sapfir search radar. The first batch of 'Fishbed-Cs' arrived in North Vietnam between June and August 1967, while the second was delivered to the VPAF in September-October. The deliveries totalled 24 fighters and 480 AAMs. The new arrivals commenced combat alert duty in July.

What was soon apparent to their pilots was the 'Fishbed-C's' superiority over the MiG-21PF in respect of its manoeuvrability at altitudes of between 2000 m and 6000 m, its tighter turning circle and higher rate of climb. But it also had weaknesses, specifically its smaller fuel capacity and austere navigational and targeting capabilities due to its primitive semi-active radar-ranging equipment.

Meanwhile, from the middle of June, there had been meetings to discuss the causes of the previous weeks' combat losses. While the enemy had been developing air combat tactics and had switched to two-level formations, the VPAF had continued to employ intercept procedures and manoeuvres that had become outdated. Further discussion revealed other contributory factors including poor intelligence of enemy plans, a lack of situational awareness

among pilots involved in aerial engagements and no rapid post-mission review of combat experiences within the 921st.

Many pilots had underestimated their enemy's capabilities, and command officers had failed to provide adequate support for pilots attempting to intercept US aircraft. It was also found that MiG-21 losses were high when the enemy conducted dedicated sweep-the-sky missions such as Operation *Bolo*. The MiG pilots also repeated the same mistakes over and over again when engaging the enemy, failing to adapt when the USAF modified its tactics in an effort to negate the growing MiG-21/R-3S threat. 'Fishbed' pilots stuck rigidly to dogfighting in the same area for too long. They had also been fooled by the enemy's tactic of disguising fighters as strike aircraft. Many pilots had failed to follow the 'hit-and-run' principle, and the cooperation between MiG-17 and MiG-21 units was not considered sufficiently effective. There were also difficulties with aircraft maintenance.

On the morning of 11 July MiG-21 pilots Le Trong Huyen and Dong Van Song, in coordination with a flight of MiG-17s, broke up an attack on the bridges at Lai Vu and Phu Luong by US Navy A-4s escorted by F-8s. Engaging the aircraft over Hai Duong, Huyen claimed to have shot down a Skyhawk, but US Navy sources did not confirm this loss – not a single American aircraft is listed as having been downed on this date. Despite Huyen's success, the MiG-21 pilots had only been assigned to this mission to provide support for their brethren flying MiG-17s.

Nguyen Ngoc Do claimed an F-105 destroyed on 2 August for his fourth victory, but again USAF records fail to corroborate this success – no Thunderchiefs were lost to any causes on this date.

US Navy aircraft from USS *Constellation* (CVA-64) were active on 10 August when they attacked a 'transshipment' centre in Phu Ly. MiG-21s flown by Bui Dinh Kinh and Dong Van Song were directed to the Hoa Binh–Cam Thuy area to intercept the strike force, and when they broke through cloud cover F-4B escorts immediately engaged the VPAF fighters. The VF-142 crew of Lt(jg) G H Freeborn and Ens R J Elliot initially hit Kinh's 'Red 4129' with an AIM-9D missile, damaging the MiG-21. It was finished off moments later by a second Sidewinder fired by the VF-142 crew of Lt Cdrs R C Davis and G O Elie. Kinh ejected, but during his descent by parachute he was shot at and killed in error by local militiamen. Song, meanwhile, made a series of evasive manoeuvres but could not avoid his MiG-21 ('Red 4229') being hit by a second AIM-9D fired by

Lt(jg) Freeborn and Ens Elliot. Song survived his second ejection and landed safely.

The 921st would enjoy a far more productive day on 23 August when radar stations reported a large package of 40 US aircraft south of Xam Neua, in Laos, bound for the Yen Vien railway marshalling yard. At 1456 hrs North Korean MiG-17 pilots took off from Kep, while their VPAF counterparts scrambled from Gia Lam. Two minutes later the MiG-21s of Nguyen Nhat Chieu and Nguyen Van Coc took off from Noi Bai to intercept the enemy strike formation at long range. The pilots were directed to fly to the west and initially stay at low altitude. They eventually climbed to 6000 m and then headed north to intercept the USAF aircraft. At Tuyen Quang, Chieu detected F-4s and F-105s 15 km away. Nguyen Van Coc recalled how the mission unfolded from there;

‘Chieu and I went the long way around to get into a better position from which to attack. Chieu fired a missile, bringing down an F-4D, while I successfully attacked the other Phantom II with an R-3S. In the meantime, Chieu commenced another attack with his second missile. He went into cloud, only to reappear moments later. Following my leader, I also attacked the Phantom II with a missile but was too close and came into the line of Chieu’s fire as he dived from above. My MiG-21 was damaged by the friendly-fire but all the controls operated normally. I requested to carry on the engagement. The command post ordered me to return to base – because of the damage, my MiG-21 was only able to do a maximum speed of 600 km/h.’



Nguyen Nhat Chieu (far right) demonstrates dogfight manoeuvres to (right to left) Nguyen Van Coc, Pham Thanh Ngan and Dang Ngoc Ngu. Chieu and Coc each shot down 555th TFS/8th TFW F-4Ds on 23 August 1967 northwest of Hanoi (*István Tópercz archive*)

Chieu's victim had been the F-4D flown by Maj C R Tyler and Capt R N Sittner, while Coc's missile had struck the Phantom II of Capt L E Carrigan and 1Lt C Lane. Both jets were from the 555th TFS/8th TFW. According to other sources, Coc had fired his missile at too close a range and pieces of the American aircraft were ingested into his engine air intake. After landing, the mechanics counted 51 pieces of the Phantom II stuck in the air intake cone.

When Chieu heard that Coc's aircraft had been damaged, he turned back to cover his comrade. As Chieu was changing direction he saw another formation of Phantom IIs and fired his second R-3S missile, hitting the 555th TFS/8th TFW F-4D of Maj R R Sawhill and 1Lt G L Gerndt – USAF records stated that this jet was actually struck by AAA. Chieu then escaped by flying into cloud, but not before he had rolled his aircraft onto its back to see three fires burning on the ground below him, marking the crash sites of three downed Phantom IIs. Both MiG-21s landed safely at Noi Bai.

This large-scale strike was rather unusual during the summer of 1967, as the USAF scaled back its sortie tempo by two-thirds in July, August and September compared with the previous three months. USAF and US Navy reconnaissance aircraft remained very active, however, repeatedly flying the same routes over North Vietnamese airfields. VPAF HQ duly ordered MiG-21 pilots to focus on intercepting enemy reconnaissance and EW aircraft, several of which were indeed destroyed.

According to VPAF records, the first reconnaissance aircraft to fall to its fighters was an RF-4C from the 16th TRS/460th TRW on 20 July, which was credited to MiG-21 pilots Nguyen Ngoc Do and Pham Thanh Ngan. That afternoon radar detected groups of F-105s and F-4s over the Nho Quan–Ninh Binh area. The MiG-21 pair took off from Noi Bai, and Do detected enemy aircraft eight to ten kilometres ahead of them. He went off in pursuit of one of the Phantom IIs, eventually launching an R-3S that destroyed the enemy aircraft. Two F-4s then made a sharp turn to attack Do's MiG-21, but he climbed into the sun to 10,000 m and returned to Noi Bai, as did Ngan. USAF records did not confirm any RF-4 losses on this date, but noted that Maj G W Corbitt and 1Lt W O Bare had been lost to unknown causes on 26 July.





Nguyen Ngoc Do climbs into the cockpit of his MiG-21F-13 'Red 4420' and prepares to takeoff from Gia Lam airfield in 1967. His jet has a camouflaged finish and is protected by the shelter of grass and earth-covered metal in the background. On 20 July 1967 Do claimed a reconnaissance Phantom II as his third aerial victory. The loss of an RF-4C from the 16th TRS/460th TRW is acknowledged by USAF records, although the date of its demise is given as 26 July 1967 – there is no explanation as to why it was lost  
(*Nguyen Xuan At*)

Two inconclusive encounters were to follow. On 27 July two MiG-21s flown by Nguyen Hong Nhi and Nguyen Dang Kinh took off to hunt enemy RF-4s. They encountered Phantom IIs over Hoa Binh, although neither side fired its weapons. On 2 August Le Trong Huyen and Dong Van Song were ordered to attack an unidentified reconnaissance aircraft, but failed to sight their target, both pilots returning to Noi Bai. An RF-4C of the 11th TRS/432nd TRW was indeed lost on this date, but to small arms fire.

On the morning of 31 August, Nguyen Hong Nhi and Nguyen Dang Kinh took off from Noi Bai and headed for Thanh Son at an altitude of 8000 m. They soon detected an enemy aircraft 14 km ahead of them, and Nhi launched an R-3S that he claimed hit an RF-4C. Again, USAF records fail to note any Phantom II losses on that date. This sequence was repeated on 10 September with an RF-101C Voodoo, Nhi and Kinh being scrambled from Noi Bai at 1012 hrs and directed to the eastern region of Vinh Yen at 9000 m. Here, they discovered enemy aircraft at an altitude of 6000 m at a range of 15 km east of Moc Chau.

Nhi launched an R-3S from optimal range and downed the RF-101C, although once again no such loss was included in official USAF records.

The MiG-21s were also victorious over Voodoos six days later. Radars detected the approach of enemy aircraft from Xam Neua and this was followed by reports of two RF-101Cs flying between Nghia Lo and Thanh Son, in RP-6. At 1055 hrs two Noi Bai-based MiG-21F-13s were scrambled to intercept. Shortly afterwards the Voodoos were sighted by Nguyen Ngoc Do and Pham Thanh Ngan flying in step formation at an altitude of 5500 m some eight kilometres away. After the RF-101C pilots had finished taking their photographs of the northwest railway line they began to exit the area, climbing to an altitude of 7315 m. Do and Ngan increased their speed to Mach 1.4 and climbed to 6000 m, at which point the former claimed to have shot down Capt R E Patterson's Voodoo with an R-3S missile. Ngan also fired an R-3S, striking Maj B R Bagley's aircraft over Son La. Both RF-101Cs had been operated by the 20th TRS/432nd TRW, and USAF records attributed the loss of Patterson's aircraft to AAA fire. Do's victory made him the VPAF's first MiG-21 ace.



Pham Thanh Ngan (left) and Nguyen Ngoc Do (right) each shot down an RF-101C Voodoo of the 20th TRS/432nd TRW while flying their MiG-21s over Son La on 16 September 1967. According to USAF loss records, Maj B R Bagley became a PoW but Capt R E Patterson was rescued. It also states that Patterson's aircraft was brought down by AAA fire (*István Toperczer archive*)

North Vietnamese MiG-21s were also successful against F-4 Phantom II and F-105 Thunderchief fighter-bombers in late September and early October. On 26 September enemy aircraft were detected heading for Hanoi. Two MiG-21s flown by Nguyen Hong Nhi and Dong Van Song were scrambled from Noi Bai, and they quickly sighted four Phantom IIs at a range of ten kilometres. Nhi attacked them and fired his first R-3S at the second F-4 in the formation. When it missed he fired his second AAM, and this time claimed to have shot the flight leader's aircraft down. The MiG-21s broke off and returned to Noi Bai. USAF records did not, however, confirm any Phantom II losses due to enemy action that day.



MiG-21PFL 'Red 4326' and MiG-21PFM 'Red 5019' are prepared for their next sorties during autumn 1967 – the first batch of MiG-21PFMs had only recently been delivered to the 921st FR when this photograph was taken. This variant became the VPAF's primary fighter type from the second half of 1968  
(*Nguyen Xuan At*)

The following afternoon, radar detected enemy aircraft over Route No 1 heading for Thai Nguyen. Nguyen Ngoc Do and Nguyen Van Ly took off from Noi Bai and attacked an F-105 formation, Do firing an R-3S from a range of 1500 m. As he rolled his aircraft away from the enemy jets, he saw an F-105 trailing a huge ball of flame. Again, USAF records state that no Thunderchiefs were lost on 27 September.



Pham Thanh Ngan frequently flew this MiG-21F-13 'Fishbed-C', which is seen here on display at the military museum in Thai Nguyen City. Its original bort number was '4520', but today it displays 'Red 4320'. Ngan was credited with two aerial victories at the beginning of October 1967 – on the 3rd, when he shot down the 435th TFS/8th TFW F-4D of Maj J D Moore and 1Lt S B Gulbrandson, and on the 7th, when he destroyed the 555th TFS/8th TFW F-4D of Maj I D Appleby and Capt W R Austin for his fourth victory.

The USAF attributed the latter loss to an SA-2, however (*István Tóperczér*)

When F-105s and F-4s raided Kep on 30 September the ADF-VPAF command ordered a pair MiG-21s from the 921st FR to intercept them, together with 'Doan Z' MiG-17s. Tran Ngoc Siu and Mai Van Cuong took off from Noi Bai and headed for Kep at an altitude of 6000 m. Cuong sighted F-105s at a range of 15 km and the MiGs attacked the enemy formation. Cuong fired an R-3S and claimed to have shot down a Thunderchief – the third time he had downed an F-105 and his fourth success overall (he had also destroyed a Firebee on 16 May 1967). He then lost visual contact with his leader and, calling him on the radio, received no answer. Tran Ngoc Siu had been killed when his MiG-21 was accidently shot down by an SA-2 SAM – North Korean pilot Lim Dang An was also killed in this engagement, probably by friendly fire. No F-105s were lost on 30 September according to USAF records, however.

In October 1967 the Soviet Union agreed to provide Vietnam with the MiG-21PFM (*Izdeliye 94A*) 'Fishbed-F' variant, the first of these arriving at Haiphong as deck cargo towards the end of the year. With more being delivered in early 1968, the 'Fishbed-F' became the VPAF's primary fighter during the second half of the year.

US tactics also changed during the course of October, with both the USAF and US Navy concentrating on paralysing VPAF operations using the so-called 'in-the-nest' destruction principle that saw its fighter-bombers targeting known MiG bases. For example, on 3 October USAF jets raided Hoa Lac and Noi Bai airfields, as well as the Cao Bang bridge. A MiG-21 pair flown by Pham Thanh Ngan and Nguyen Van Ly took off from Noi Bai and climbed to 9000 m on a heading of 270 degrees. Ngan and Ly encountered two F-4Ds and two RF-4Cs, with the former using an R-3S to damage the F-4D of Maj J D Moore and 1Lt S B Gulbrandson who had to shut down the flaming left engine of their 435th TFS/8th TFW aircraft. They were able to reach the Laotian border before ejecting.



On 7 October 1967 Nguyen Nhat Chieu became an ace when he achieved his fifth aerial victory, having shot down the 13th TFS/388th TFW F-105F of Capts J D Howard and G L Shamblee over Quang Ninh Province. Chieu was among the first group of VPAF pilots trained to fly the MiG-17 in China between 1956 and 1964, prior to converting to the MiG-21 in Vietnam in 1966. His service with the 921st FR began in 1964, and in 1972 he transferred to the 927th FR. VPAF records credit him with six aerial victories (*Nguyen*

*Xuan At*)

Four days later Pham Thanh Ngan and Mai Van Cuong left Noi Bai and headed for the Son Tay-Thanh Son area after radar detected a group of enemy aircraft south of Na San. The MiG-21s turned hard left and climbed to an

altitude of 3000 m, where they intercepted a mixed formation of F-4Ds and RF-4Cs approaching Hoa Lac at 4000 m. Each MiG pilot claimed a Phantom II destroyed with an R-3S missile before breaking off the engagement and crossing the Da River. Ngan was credited with the destruction of the 555th TFS/8th TFW F-4D of Maj I D Appleby and Capt W R Austin, making him the VPAF's second MiG-21 ace, although the USAF claimed the aircraft had fallen victim to an SA-2. Cuong's kill, which also gave him ace status, was not confirmed by USAF loss records, however.

That afternoon (7 October) an F-105 formation headed for the railway marshalling yard at Kep. The local command post ordered two MiG-21s flown by Nguyen Nhat Chieu and Nguyen Van Coc to intercept, Chieu spotting four Thunderchiefs over Quang Ninh. The American pilots soon realised they were being hunted by MiGs and jettisoned their bombs, before heading out to sea. Chieu pursued them and fired an R-3S missile that hit the 13th TFS/388th TFW F-105F *Wild Weasel* of Capts J D Howard and G L Shamblee – the destruction of the jet made Chieu an ace, although his first success had been claimed with the MiG-17. Shortly thereafter Coc claimed to have downed the 34th TFS/388th TFW F-105D of Maj W E Fullam, although USAF records attributed the loss to 85 mm AAA.

On 9 October, when more F-4s and F-105s were detected heading for the railway line at Quang Hien, two MiG-21F-13s flown by Nguyen Hong Nhi and Dong Van Song were scrambled from Noi Bai and flew at 5000 m over Route No 2 to the west of Thanh Son. The MiG pilots detected the F-105s at a range of 20 km, Nhi attacking the lowest flight in the formation with two R-3S missiles. Maj J A Clements' F-105D from the 34th TFS/388th TFW was hit in the tailpipe, forcing the pilot to eject – the aeroplane's demise gave Nhi his fifth kill. Song also claimed to have shot down an F-105, although USAF records only list the loss of Clements' F-105D.

It was the VPAF's turn to lose a fighter on 24 October after Nguyen Dang Kinh and Dong Van Song were scrambled to attack F-105s and F-4s as they headed for Noi Bai airfield. Immediately after they took off from Noi Bai the MiG-21 pair found themselves embroiled in a ferocious dogfight with Phantom IIs from the 433rd TFS/8th TFW at 8000 m over the Yen Chau-Phu Tho area. Instead of continuing to pursue USAF aircraft ahead of them, the MiG pilots erroneously turned back to engage the F-4s. The Phantom II crews launched missiles at the MiG-21s, but all of them missed. Realising that the MiG-21s were at a disadvantage, ADF-VPAF command ordered them to break off and land at

Gia Lam. The F-4s continued their pursuit, however, and Song's MiG-21 was hit by 20 mm cannon fired from a podded weapon fitted to the F-4D of Maj W L Kirk and 1Lt T R Bongartz. Song successfully ejected – for the third, and last, time – while Kinh returned to Noi Bai.



On 9 October 1967 Nguyen Hong Nhi used two R-3S AAMs to shoot down Maj J A Clements' 34th TFS/388th TFW F-105D northwest of Thai Nguyen (*István Tópercz archive*)

The 921st FR airfield had, in the meantime, been attacked by US Navy fighter-bombers, dropping ordnance along the length of the runway and damaging the taxiway, aircraft parking areas, airfield control tower, hangars, aircraft revetments and AAA positions. There were further coordinated attacks on North Vietnamese airfields on 24 and 25 October, destroying 12 MiGs on the ground. On the 26th USAF and US Navy aircraft began a fresh escalation of attacks on targets in the Hanoi area, and the MiG-21 pair of Mai Van Cuong and Nguyen Van Coc took off to intercept a group of F-4s over the Nho Quan-Ninh Binh area. Cuong's MiG-21 was subsequently shot down by an AIM-7 missile fired by the VF-143 F-4B Phantom II of Lt(jg)s R P Hickey and J G Morris, flying from *Constellation*. Cuong ejected safely and his wingman, Coc, landed at Noi Bai.

On the 29th F-4s and F-105s were active in the Nam Dinh-Ninh Binh area, and a pair of MiG-21F-13s, flown by Nguyen Nhat Chieu and Dang Ngoc Ngu,

were scrambled from Noi Bai to intercept them. After 16 minutes the ‘Fishbed’ pilots turned left towards the Phantom IIs, at which point the enemy aircraft detected them and launched missiles. Chieu and Ngu were able to avoid them by flying a series of banking manoeuvres, after which Chieu dived from 7500 m down to 3500 m in order to get onto the tail of an F-4. He fired an R-3S, which detonated near the Phantom II, causing it to trail smoke. The MiG-21s broke off and returned to Kep, where Chieu claimed his sixth, and last, victory. However, according to USAF records, no Phantom IIs were lost on this date.



This striped MiG-21F-13 was used by Nguyen Nhat Chieu, who claimed an F-4 destroyed over Phu Ly on 29 October 1967. Again, this loss was not confirmed by US records (*István Toperczer archive*)

Noi Bai air base was so heavily damaged during aerial attacks mounted in late October and early November that the 921st FR was forced to move its alert duty aircraft to Gia Lam. However, it was soon found that the lack of support facilities on site there was having a detrimental effect on the regiment's sortie rates, so it was decided to move the jets back to Noi Bai but keep the pilots safe at Gia Lam. This base swapping coincided with VPAF central command issuing an order that fighter regiments should have at least one aircraft in the air at all times during daylight hours. With the runway at the latter site badly bomb-damaged, the 921st was forced to use the 16 m-wide taxiway at Noi Bai as the runway so as to fulfil the new order.

Nguyen Hong Nhi and Nguyen Dang Kinh were the first pilots to take off from the taxiway during the morning of 7 November after they had been picked up from Gia Lam and flown to Noi Bai by Mi-4 helicopter. In the afternoon,



radar stations detected F-105s and F-4s heading for the Lang Gia railway marshalling yard. Nhi and Kinh took off to fly a holding pattern directly above the base, and when they had climbed to 6000 m they were informed that their targets were 15 km away. Nhi engaged afterburner and attacked an F-105 at the extreme left of the enemy formation, firing an R-3S missile that hit the jet's tail. Its pilot turned sharply and flew right under the belly of Nhi's MiG. Nhi then banked to the left to close on the next flight of F-105s, duly firing his second missile. He claimed that it hit the F-105D of Maj W C Diehl, the aircraft beginning to burn prior to it crashing southwest of Kep. The USAF claimed the Thunderchief, from the 469th TFS/388th TFW, had fallen to AAA.



Nguyen Dang Kinh (left) and Nguyen Hong Nhi (right) scrambled from Noi Bai's taxiway on 7 November 1967 to engage F-105s and F-4s over the Van Yen-Phu Yen area. Nhi claimed to have shot down the 469th TFS/388th TFW F-105D of Maj W C Diehl, while Kinh was credited with the destruction of an F-4, although his success was not confirmed by USAF loss records (*Nguyen Xuan At*)

Kinh, meanwhile, saw that eight enemy aircraft were chasing Nhi. Coming to the aid of his flight leader, he fired a missile and two flights of F-4s were forced to make a sharp turn to the right to defeat the 'Atoll'. Having forced the USAF fighters to abandon their pursuit, Kinh climbed to an altitude of 10,000 m and headed for Kien An airfield, where he followed Nhi in, making a perfect landing

on the taxiway. Kinh claimed a Phantom II destroyed, although according to USAF records Diehl's F-105 was the only casualty during this mission.

The next day Dang Ngoc Ngu and Nguyen Van Ly took off from Noi Bai and were directed to intercept a MiGCAP flight of F-4Ds flying at 5500 m some 40 km northeast of Yen Bai. When the Phantom II crews realised the MiGs were chasing them they split into two sections. Ngu attacked the flight leader and ordered Ly to engage another Phantom II. Despite evasive manoeuvring, the F-4D of Maj W S Gordon and 1Lt R C Brenneman from the 555th TFS/8th TFW was hit by Ngu's R-3S missile. Ly, meanwhile, also achieved success, and his victim, an F-4, went into a dive trailing flame. Both MiG-21 pilots then broke off the combat and landed safely at Gia Lam. USAF records confirmed only Ngu's kill.



On 8 November 1967 ace-to-be Dang Ngoc Ngu claimed his fourth aerial victory when he shot down the 555th TFS/8th TFW F-4D of Maj W S Gordon and 1Lt R C Brenneman over the Phu Yen-Yen Bai area. Ngu trained to fly the MiG-17 between 1961 and 1965 and converted to the MiG-21 in the Soviet Union in 1965/66. His service with the 921st FR began in 1966, and VPAF records credit him with seven aerial victories during the war (*Nguyen Xuan At*)

On 16 November the USAF raided Hoa Lac, Kep and Kien An airfields. Two 921st FR MiG-21s flown by Pham Thanh Ngan and Nguyen Van Ly were ordered to intercept, and in the subsequent aerial battle they encountered both F-105s and F-4s. Each MiG pilot launched an R-3S missile at a Phantom II, but without result. They then broke off the engagement and the command post ordered them to fly to China and land at Ningming airfield in Guangxi Region, on the Chinese-Vietnamese border. Several Chinese MiG-17s and MiG-19s were in the landing pattern overhead the airfield at the time, but priority was given to Ngan and Ly due to concerns over their remaining fuel levels. The pair returned home the following day.

Two of the 921st FR's leading aces, Pham Thanh Ngan and Nguyen Van Coc, were involved in aerial battles during the second half of November. Despite bad weather on the 18th, 16 *Iron Hand* F-105D/Fs, with F-4 fighter escorts, swept in to attack SAM sites and AAA positions ahead of bombers targeting Noi Bai and other sites in Hanoi. The MiG-21s took off and flew out over Thanh Son. Ten minutes later, Coc detected targets at a range of eight kilometres heading from Yen Chau to Ha Hoa. Ngan also spotted enemy aircraft, the pair having clearly identified four flights of four F-105s.



Pham Thanh Ngan (left) and Nguyen Van Coc (right – note the pilot's personal identity number, A371, on his flight jacket) discuss details of their aerial battle with the aid of a map on 18 November 1967. That day

they shot down two F-105s northwest of Noi Bai. Ngan claimed to have shot down the 34th TFS/388th TFW F-105F of Maj O M Dardeau and Capt E W Lehnhoff, while Coc's R-3S missile hit Lt Col W N Reed's F-105D (*Nguyen Xuan At*)

Both pilots climbed to gain an altitude advantage of 1500 to 2000 m above the enemy aircraft, before sweeping in to the attack. Ngan fired an R-3S and the F-105F of Maj O M Dardeau and Capt E W Lehnhoff, from the 34th TFS/388th TFW, burst into flames and crashed at Van Du hamlet on the Lo River. After launching his first missile, Ngan spotted another F-105 and fired a second 'Atoll', but he did not observe any result. Coc, however, saw the Thunderchief hit by Ngan's missile, although it was only damaged by the strike. Ngan then spotted more enemy aircraft behind him, so he increased his speed and climbed to 7000 m. Coc, meanwhile, pursued another Thunderchief, and fired an R-3S missile at it. The result was that Lt Col W N Reed's F-105D from the 469th TFS/388th TFW burst into flames and crashed. The two MiG-21 pilots then broke off and flew towards Nanning airfield in Guangxi Province, China. However, because the weather was so bad there they had to return to Kep instead.

On 20 November radar detected enemy aircraft southwest of Moc Chau and Xam Neua, and at 0733 hrs Pham Thanh Ngan and Nguyen Van Coc took off and headed for Thanh Son, where they prepared to attack an EB-66 Destroyer. The command post directed the two MiG pilots north of Moc Chau to await the aircraft's arrival. The EB-66 approached Nghia Lo–Yen Bai at 9000 m and Ngan and Coc increased speed to attack it. However, instead of the EB-66, they sighted two F-4s at 0753 hrs at a range of between seven and ten kilometres. The Phantom IIs were also aware of the MiGs, so Ngan turned away and returned to Kep. Coc, meanwhile, fired an R-3S, but it missed and he returned to Noi Bai.

That afternoon, after an EB-66 began transmitting jamming signals from southeast of Xam Neua, 12 F-105s and four F-4s flew in to attack the Lang Lau railway bridge near Yen Bai. At 1550 hrs Ngan and Coc took off again and headed for Thanh Son–Phu Tho. After ten minutes they spotted F-105s and F-4s ten kilometres away. Ngan attacked the Thunderchiefs on the left of the formation, launching an R-3S AAM. The missile hit Capt W W Butler's F-105D, the 469th TFS/388th TFW jet bursting into flames. Ngan then turned his attention to a second F-105 that he had seen on his right, firing his remaining R-3S at it, but this time he saw no explosion. Meanwhile, Coc had spotted two Thunderchiefs climbing ahead of him and quickly fired an R-3S AAM. The F-

105 burst into flames and Coc broke off to fly north of Thai Nguyen, this victory having given him ace status. He and Ngan then returned to Noi Bai. Only Ngan's kill was confirmed by USAF loss records, however.



MiG-21 ace Pham Thanh Ngan is pictured wearing his seven 'Huy Hieu Bac Ho' ('Uncle Ho' badges). On 20 November 1967 he claimed his seventh aerial victory when he shot down the 469th TFS/388th TFW F-105D of Capt W W Butler over Ha Hoa. Ngan trained on the MiG-17 between 1961 and 1964 and converted to the MiG-21 in the Soviet Union in 1965/66. He began his service with the 921st FR in 1966. VPAF records credited him with achieving eight aerial victories during the war (*István Toperczer archive*)

During this period the USAF used EC-121 Warning Stars to provide information to pilots about the location of North Vietnamese MiGs, while its EB-66 Destroyers jammed VPAF radar sites, rendering them virtually useless. The latter were vital in the early detection of incoming enemy aircraft, giving VPAF MiG pilots time to intercept the approaching formations and providing sighting information for SAM and AAA batteries. The EB-66 crews detected and gathered information about the location of the radar sites and the frequencies they transmitted on, allowing them to jam their signals. The EC-121s played a key role by monitoring airborne MiGs and guiding US fighters to intercept them.

Orbiting safely on the right side of the border, or at a safe distance off the coast of North Vietnam, EC-121 crews used their aircraft's radar in conjunction with enemy radio communications to detect and locate MiGs inside North Vietnamese airspace.



According to VPAF records, 'Red 4326' was used by Nguyen Dang Kinh to shoot down an EB-66 Destroyer EW aircraft on 19 November 1967 over Lang Chanh, in Thanh Hoa Province. USAF loss records did not confirm his success, however (*Nguyen Xuan At*)

The EB-66 electronic jamming aircraft enjoyed considerable success, limiting the MiG-21s' effectiveness, so it was hardly surprising that when one of these aircraft was detected the VPAF went to considerable lengths to destroy it. On 19 November an EB-66 was discovered operating over the Thanh Hoa region. Vu Ngoc Dinh and Nguyen Dang Kinh took off from Noi Bai and climbed to 10,000 m. The MiG-21 pair increased their speed to 1100 km/h and after three minutes Dinh spotted the first close support flight of Phantom IIs. He then sighted the EB-66 12 to 15 km ahead and to the left. Kinh launched his first R-3S at the Destroyer's left engine, but the range was too great and the missile exploded behind its tail. He shortened the range and fired a second missile, this time from 1200 m. VPAF sources state that the EB-66 was damaged and crashed in flames into the jungle of Lang Chanh, in Thanh Hoa Province. Kinh then climbed to 13,000 m and turned to fly over Hoa Binh and Thai Nguyen.

The escorting F-4 crews, which had failed to detect the approaching MiG-21s until it was too late, belatedly turned to engage the VPAF fighters. Dinh reversed his course in order to cover Kinh, because his wingman had already fired both his missiles. Their American opponents quickly realised that they had no prospect of getting on the tails of the fleeing MiG-21s, so they broke off the attack. USAF records do not confirm the loss of the EB-66.

Thanks to the monsoon, visibility was limited in December, with dark clouds over much of North Vietnam. By the middle of the month the weather had

improved, and enemy air strikes were resumed on the Hanoi area. On the 12th 12 F-105s and four F-4s were met by a MiG-21 pair flown by Nguyen Van Coc and Nguyen Van Ly, who were directed to the Son Dong–Luc Ngan area in Bac Giang Province. Five minutes later the local command post ordered them to change direction and head for Hai Duong–Haiphong. By the time they had climbed to 6000 m, the enemy was 35 km ahead of them, and shortly thereafter Coc detected USAF aircraft to his right. The two MiG pilots increased speed, Coc ordering Ly to attack the tail-end flight while he went for the aircraft in front. Coc fired his R-3S missile and, rolling his aircraft onto its back to observe the results, saw that the F-105 he had targeted was on fire. Ly was covering him, but there were a number of F-4s behind him so he climbed to 11,000 m and left the area. USAF records do not confirm Coc's victory, stating that the F-105 he hit returned to base in a damaged state.



Nguyen Van Ly (middle) and Nguyen Van Coc (right) are seen with their groundcrews in front of the famous 'Red 4324'. On 12 December 1967 they attacked F-105s over the Son Dong-Luc Ngan area and Coc shot down a Thunderchief. This is confirmed by VPAF records but not by USAF records, which state that no F-105s were lost (*István Toperczer archive*)

Two days later the 555th TFS/8th TFW F-4D flown by Korean War ace Maj James Low and 1Lt H J Hill was downed by an AAM during an early morning

CAP over Kep, the Phantom II being hit as the crew tried to escape from the area after running low on fuel during a lengthy dogfight. No corresponding claim was made by the 921st FR, so the aircraft must have fallen to a 'Doan Z' MiG-21 pilot.



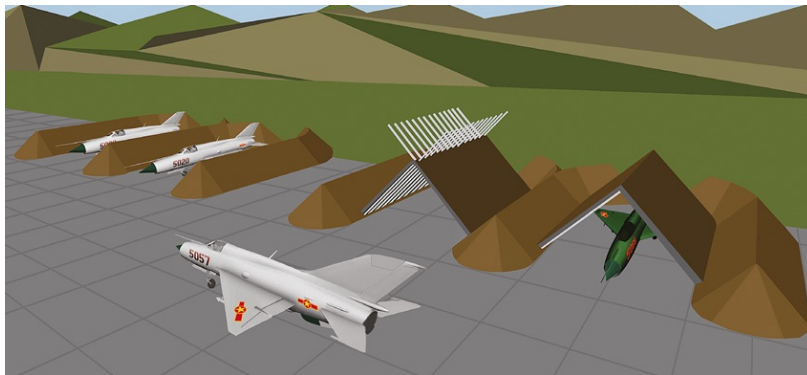
On 17 December 1967 Vu Ngoc Dinh shot down 1Lt J T Ellis' 469th TFS/388th TFW F-105D, which crashed in the Thai Nguyen area. According to VPAF records, Dinh claimed another F-105 Thunderchief that day, although the victory was not confirmed by USAF loss records (*Nguyen Xuan At*)

On 17 December a MiG-17 flight assisted three MiG-21s in attacking a formation of F-105s and F-4s heading for Hanoi. For this engagement the 921st FR decided to test a new formation consisting of three MiG-21s. Vu Ngoc Dinh, Nguyen Dang Kinh and Nguyen Hong Nhi were given the job of escorting the 'Fresco-Cs', but the resulting combat was inconclusive. In the afternoon radar detected enemy aircraft over Phu Tho, bound for the Lang Lau railway bridge, and two MiG-21s flown by Dinh and Kinh took off from Noi Bai. Guided to Hoa Lac, they then turned right towards Thanh Son before performing an 'S' manoeuvre that took them west of Yen Lap. As the enemy aircraft approached Phu Ninh, Dinh spotted F-105s and F-4s 10-15 km away. Covered by Kinh, he fired two R-3Ss one after the other and claimed two Thunderchiefs destroyed. Only one jet was lost, however, according to USAF records, 1Lt J T Ellis from the 469th TFS/388th TFW ejecting from his F-105D into captivity. His weaponry exhausted, Dinh, now an ace, broke off combat and landed at Gia Lam. He subsequently recalled the events of that day;



‘I flew with Kinh but Nhi flew alone. We encountered American aircraft heading from Thailand to Tam Dao to attack Hanoi. Wow! They made a long line which seemed to darken the whole sky. I shouted, “Attack immediately together!” Then I rushed into the middle of their formation and fired at one aircraft. After that I swerved, dived down, rolled over and shot down the second one. When I rolled again, intending to fire at the third one, I discovered I’d run out of missiles. Each of our aircraft carried only two AAMs. I wished that I’d had more missiles to fire at more enemy aircraft.’

As noted above, Nguyen Hong Nhi took off from Noi Bai alone shortly after Dinh and Kinh, and he too flew in the direction of Yen Lap to intercept the approaching formations of F-105s and F-4s. Also sighting enemy aircraft at a range of 10-15 km, he launched an R-3S when his MiG was within firing range of an F-105. Nhi claimed to have set the fighter-bomber on fire with his missile, but USAF records fail to corroborate the kill. As he broke away, Nhi sighted a group of Thunderchiefs heading for Hanoi. He engaged full afterburner and got to within interception range, but when he attempted to fire his second missile the R-3S failed to launch. Nhi then broke off the chase with an ‘S’ manoeuvre and returned to Noi Bai.



In all, 140 aircraft shelters and earth revetments were erected to protect MiG fighters on North Vietnamese airfields. Initially, these earth revetments provided protection against conventional ordnance, but not against cluster bomb-type sub-munitions. Later, the U-shaped revetments were complemented by hut-shaped shelters that were only suitable for MiG-21s (*István Toperczer*)

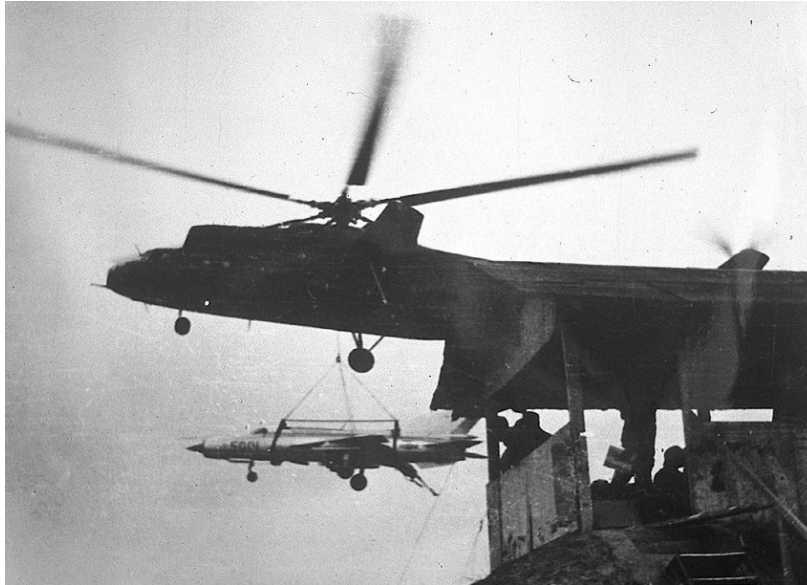
The USAF sent another large force of aircraft to attack Hanoi on 19 December, and this time MiG-17s and MiG-21s from ‘Doan Z’ engaged them east and northeast of the Vietnamese capital, while SAM and AAA units covered the southeastern areas of the city. At 0700 hrs the radar station detected yet more

American aircraft at an altitude of 4000 m en route to Yen Chau-Yen Bai, so Nguyen Dang Kinh and Bui Duc Nhu were scrambled from Noi Bai six minutes later and sent to the Son Tay-Hoa Binh area. When their MiG-21s were passing over Thanh Son they turned left towards Vu Ban and then left again. At 0719 hrs radar detected a second group of enemy aircraft heading from Yen Chau to Tuyen Quang. The MiG-21s were guided from Hoa Binh to Yen Lap as the intruders were passing overhead Doan Thuong railway station, Kinh detecting F-4s and F-105s at a range of 12 km and firing an R-3S. He claimed the missile hit a Phantom II northeast of Phu Tho, the MiG-21s being ordered to break off combat and return to Noi Bai shortly thereafter. USAF records do not list any F-4 losses for that day.

That afternoon Dang Ngoc Ngu and Nguyen Van Coc were ordered to intercept enemy aircraft, but as they failed to get behind their targets the pilots broke off the engagement.

After these battles the Americans were forced to announce the end of their seventh wave of attacks on Hanoi. For more than ten days the situation remained relatively quiet until, on 30 December, a strike group of F-105s and F-4s was despatched to attack targets in the Yen Bai area. The 921st FR sent a pair of MiG-21s, flown by Ha Van Chuc and Nguyen Dang Kinh, to intercept the intruders but they failed to find the USAF jets.

Between February 1966 and December 1967 North Vietnamese tactics in combatting intruding US aircraft had been continuously developed. GCI had proven critical to the outcome of many aerial battles, with controllers continuously changing the direction from which defending fighters engaged enemy strike formations, thus keeping F-105 and F-4 crews on their toes. From July 1967 GCI helped hone the MiG-21's ability to conduct long-range operations outside the killing zones established for ADF-VPAF's AAA and SA-2 air defence batteries. To maintain optimum manoeuvrability and flexibility the MiG-21s were usually flown at between 3000-5000 m, and they typically approached the enemy head-on, some 60-70 degrees of their nose (with a speed differential of 100-150 km/h).



The first MiG-21PFM ('Red 5001') was flown into Noi Bai at the end of 1967 slung beneath a heavy transport Mi-6 'Hook' helicopter. A special harness was designed for carrying MiG-21s between the underground hangars cut into mountainsides and their operating airfields. This happened hundreds of times during the war (*István Tópercz archive*)

Many MiG-21s were lost on the ground during this period, with US attacks on Gia Lam, Kep, Noi Bai and Kien An airfields being at their most frequent in October 1967. Indeed, Noi Bai and Gia Lam had to be evacuated, these airfields then being hastily rebuilt with help from the local population. Earth revetments were erected for the fighters both on the airfields themselves and at the foot of nearby hills. Many MiGs were slung beneath Mi-6 helicopters as they were conveyed to safer areas and mountain caves up to 30 km away from their bases. US reconnaissance aircraft had spotted dummy jets at North Vietnamese bases from 1965, and in October 1967 a decoy fabrication area was observed at Bac Mai airfield – the VPAF used bamboo sticks, canvas, metal and wood to construct dummy MiG fighters. The ability to rapidly repair battle-damaged airfields was considered by the VPAF to be a major contribution to the successes achieved by its MiG force during 1967.

It was also thought that the effectiveness of the fighter regiments had increased when they were called upon to defend the cities of Hanoi and Haiphong, and cooperation between different fighter units was considered good, just as with ground-based ADF-VPAF air defence units. On the other hand, the 'victory-defeat-reinforcement-victory' mentality was thought to be more prevalent among pilots than the required 'victory-improvement-victory' outlook.

During 1967 the fighter regiments had fought 129 aerial combats in which 124 US aircraft had been shot down. MiG-21 pilots had claimed 49 victories. Compared to the previous year, training results were considered to have improved. The 921st FR organised 182 flights in VMC and IMC conditions, including 80 at night. Total flying time was 507 hrs 38 min. All MiG pilots practised takeoffs and landings on steel-planking or clay.



A groundcrewman prepares a brake parachute container for the next sortie as his colleagues complete the installation of R-3S missiles on another MiG-21PFM at Noi Bai air base in 1967. Note the Il-28 'Beagle' bomber in the background, which has been camouflaged in dark green paint. The 929th Bomber Regiment was affiliated to the 921st FR at this time (*Nguyen Xuan At*)

Despite the intensity of US aerial attacks, ground staff cut maintenance time by a third, yet still maintained the quality of their work. The serviceability rate was kept at 99 per cent. During the year 40 newly delivered aircraft had been assembled and ten that had suffered combat damaged had been repaired to full serviceability. Many airframe improvement projects had also been completed.

## CHAPTER FOUR

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# FACING NEW THREATS

The USAF and US Navy continued with their MiG-neutralising sweep-the-sky policy in 1968, but with new tactics that included more effective jamming of VPAF radar and GCI sites. US fighters would arrive over North Vietnam during the morning, in advance of the fighter-bombers, using cloud cover to mask their location while climbing to higher altitudes to secure the advantage in both height and speed as they challenged the MiGs to attack them. Strikes on North Vietnamese airfields also increased in frequency in an effort to destroy runways and base infrastructure facilities.



Pilots of the 921st FR run to their MiG-21PFMs at Noi Bai air base in early 1968. When 33 newly qualified 'Fishbed' pilots returned home from the Soviet Union, all were immediately rostered for combat operations with the 921st FR (*Nguyen Xuan At*)

However, much-needed reinforcements were arriving to bolster North Vietnamese defences. In the first half of 1968, 33 newly qualified MiG-21 pilots returned from the Soviet Union, and they were immediately posted to the 921st FR. At the same time the USSR supplied the VPAF with 36 MiG-21PFMs.

The new year started as the old one had finished. On the morning of 3 January a large formation of enemy aircraft was detected by radar in the northwest region. Two MiG-21s flown by Nguyen Dang Kinh and Bui Duc Nhu took off from Noi Bai and headed for Thanh Son. Kinh sighted the bomb-laden F-105s flying ahead of the escorting F-4s and he immediately launched an R-3S AAM that he claimed hit a Thunderchief. Nhu quickly followed suit, shooting down another F-105 at very close range. Neither loss was confirmed by official USAF records, however. Upon landing at Kep airfield Kinh overran the runway and

destroyed his nose landing gear. Further damage was caused to the cockpit when the groundcrew were forced to smash the canopy in order to extricate the uninjured Kinh.

The raiders returned in the afternoon when 36 USAF aircraft were reported flying over Yen Chau heading for the Kinh No railway marshalling yard. During the ensuing battle, Ha Van Chuc shot down Col J E Bean's 469th TFS/388th TFW F-105D west of Thai Nguyen. Chuc claimed further success on the 14th when he reported shooting down Maj S H Horne's Thunderchief (again from the 469th TFS/388th TFW) east of Yen Bai. However, Chuc's MiG-21 was damaged in the dogfight – there were no claims made by USAF pilots on this date – and he sustained wounds from which he died five days later.



On 3 February 1968 Nguyen Van Coc (in cockpit) and Pham Thanh Ngan (right) took part in an engagement over the Hoi Xuan area of Thanh Hoa Province. Here, Ngan demonstrates how he attacked the 509th FIS/405th FW F-102A of 1Lt W L Wiggins. Coc attacked the other F-102A, but his missile missed its target (*Nguyen Xuan At*)

The 921st also claimed success on 14 January, with a highly prized EB-66 kill, which this time was confirmed by the USAF – indeed, it was the only Destroyer that was listed as downed by a MiG. VPAF radar detected an EB-66 at an altitude of 8840 m accompanied by a large formation of F-4s and F-105s near Route No 15 (part of the Ho Chi Minh Trail). A pair of MiG-21s was scrambled from Noi Bai and at 1547 hrs Nguyen Dang Kinh and Dong Van Song located the EB-66 at a range of 12 km. Kinh launched two R-3S missiles at the EW

aircraft but without any result. Song then closed on the Destroyer and fired a single missile that hit the starboard engine of the EB-66C from the 41st TEWS/355th TFW. The jet crashed 65 km west of Thanh Hoa.

By the end of January the 921st FR was facing a shortage of pilots and aircraft, and it was forced to resort to a 'two-plus-one' formation. As a result, on 3 February, Pham Thanh Ngan and Nguyen Van Coc took off three times to intercept enemy aircraft, while Mai Van Cuong flew a diversionary sortie. In the morning they were scrambled to counter flights of F-4s, but the subsequent combat was inconclusive. In the afternoon radar detected two enemy aircraft approaching from south of Moc Chau. Ngan and Coc took off for a fourth time and headed for Hoa Binh, while Mai Van Cuong flew a diversionary sortie towards Thanh Son. At 1550 hrs the MiG-21 pair turned south for Quy Chau and the pilots sighted the target near Hoi Xuan at an altitude of 9500 m. The MiGs were at 10,500 m when Ngan reported the presence of an 'EB-66' just five kilometres away over Que Phong, on the border with Laos. He banked to the left and discovered not the expected Destroyer but a pair of F-102A Delta Daggers from the 509th FIS/405th FW, these aircraft occasionally flying CAPs for air strikes.

Maj A L Lomax turned to fire three AIM-4D Falcons at the MiGs but they all missed. Meanwhile, Ngan had manoeuvred into a firing position behind Lomax's wingman, 1Lt W L Wiggins. He attempted to launch a missile but the R-3S failed to leave the rail. He immediately launched his second AAM and shot down 1Lt W L Wiggins' F-102A. It was the only Delta Dagger kill credited to a MiG-21 during the conflict.

On 5 February the USAF sent a large formation of F-105s, escorted by F-4s, to attack targets in the Son Duong, Tuyen Quang and Thai Nguyen areas. At 0739 hrs Nguyen Ngoc Do and Hoang Bieu took off from Noi Bai and headed for the Son Duong–Hoa Binh area. Bieu spotted enemy aircraft at a range of 15 km, while Do sighted a group of F-105s flying ahead of them from left to right. The MiG pilots turned sharply to pursue them as they headed for their target – military barracks – at Thai Nguyen. Do and Bieu followed the 'fast-attack, deep-penetration' tactic and swept over the escorting fighters as they went after the Thunderchiefs.





In this view of the cockpit of a MiG-21PFM 'Fishbed-F', the RP-21 radar screen is seen on a level with the pilot's head. The equipment was used to search and track aerial targets in bad weather, at night and from long range, but its primary task was to guide the RS-2US (AA-1 'Alkali') missile to impact. Although the 'Alkali' missile was accepted into service by the VPAF in 1968, it enjoyed little success in the war (*Ernö Nagy*)

When the F-4 pilots became aware of the MiG-21s they split up and broke formation. Do flew past them and closed on the F-105s ahead. He fired an R-3S missile and saw Capt C W Lasiter's F-105D (from the 34th TFS/388th TFW) engulfed in a ball of flames. Do broke off and returned to Noi Bai. The other F-4s turned back to attack the remaining MiG-21 and fired two AIM-4 Falcon missiles at it. Both missed, although the USAF awarded a kill to Capt R G Hill and 1Lt B V Huneke – they claimed one of their missiles had blown the MiG's tail off. Presumably because of the difference in time zones, VPAF records list the date of Do's victory as 5 February, while US records give it as the 4th.

After suffering an increasing number of losses to the VPAF, the USAF struck back during February with MiG-21 kills claimed on the 6th, 12th and 14th – these successes were all credited to F-4D crews from the 8th TFW.

Following the hectic start to the new year, the number of aerial engagements fought in March and April drastically decreased due to the dwindling number of

serviceable MiG-21s. The American focus of operations also shifted away from Hanoi and Haiphong to Military District No 4 in the south of the country, USAF and US Navy aircraft attacking targets in this area from Lam River in Nghe An Province to Gianh River in Quang Binh Province. In late March the ADF-VPAF command met to consider this new development and formulate a plan for the defence of the supply routes in Military District No 4. They established headquarters at Hanoi, Gia Lam and Noi Bai, with support stations at Hoa Lac, Kien An and Tho Xuan airfields.

The ADF-VPAF command also ordered engineer units to repair Tho Xuan (in Thanh Hoa Province) and rebuild Anh Son, Vinh (Nghe An Province), Dong Hoi, Gat (Quang Binh Province) and Cam Thuy (Thanh Hoa Province). After the completion of Tho Xuan it was intended that MiG-17s and MiG-21s would operate from there to cover the southern front. Later, Tho Xuan, Anh Son, Vinh and Dong Hoi received new communication systems, and emergency runways were also built.

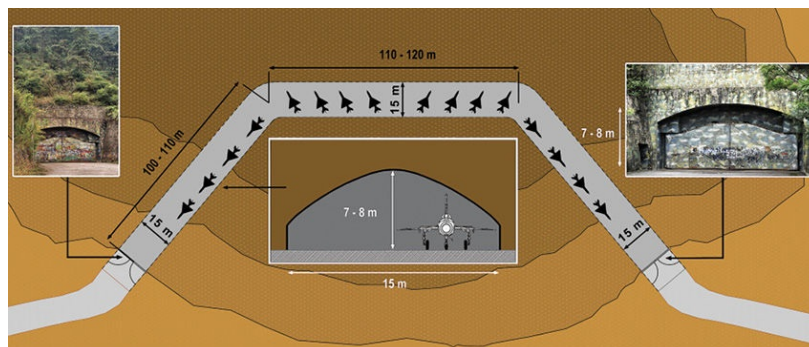


Groundcrew perform routine maintenance on MiG-21PFM 'Red 5031' at Tho Xuan in October 1968. The cover of the avionics bay in front of the cockpit has been removed to enable the chief engineer to check the parameters of the RP-21 locator via the instrument panel, while other specialists inspect the main gear and tail (*Nguyen Xuan Ai*)

In early April, the VPAF's Commander-in-Chief, Nguyen Van Tien, and other high-ranking officers arrived in Military District No 4 to study the weather, receive briefings on enemy tactics, review the state of airfields in this area and check on the preparations being made to allow MiGs to be stationed there. Tho

Xuan was opened shortly thereafter, and the few serviceable aircraft were regularly subjected to temporary deployments at Noi Bai, Gia Lam, Kep, Hoa Lac, Kien An, Tho Xuan and Vinh according to operational requirements. There were communication and control centres all the way from Tho Xuan to Quang Binh, which vastly improved the command system in Military District No 4. Command teams were organised at Tho Xuan, Vinh and Anh Son airfields, led by officers of the 921st and 923rd FRs. Tho Xuan airfield was also expanded to serve as a main base for the MiGs. With everything now in place, ADF-VPAF command ordered the 921st FR to base two MiG-21s at Tho Xuan and undertake some 'test' aerial battles to see how prepared the GCI facilities in the area really were.

When hitting targets in Military District No 4, enemy aircraft operated under the guidance and control of their own land-based radar sites in Laos and South Vietnam, as well as shipboard radar mounted on US Navy vessels sailing off the coast. This meant attacking jets could quickly change their tactics when MiGs were detected nearby. They made sudden attacks on various targets in the area and, when they met MiGs, they jettisoned their bombs and retreated towards the sea. They also used small formations of aircraft to conduct low-altitude early morning raids on the various airfields in Military District No 4, these strikes being generated in an attempt to force the MiG units to abandon their bases and head back north.



MiG bunkers were constructed in the hills at Noi Bai, Yen Bai, Anh Son and Kien An airfields. These bunkers had camouflaged and armoured double concrete doors and could accommodate between six and 30 MiGs. When the scramble order came the 'Fishbeds' were started up in the cave and then took off from a taxiway or runway (*István Toperczer*)

Meanwhile, the newly assembled MiG-21PFMs were encountering fresh difficulties. Some aircraft had been shot down in February shortly after being

assigned to the 921st, while others were destroyed in airfield strikes. Furthermore, jets damaged in the latter attacks could not be repaired due to a lack of spare parts. In fact, the number of combat-ready MiG-21s had been unacceptably low from the very beginning of 1968. The aggregate number of MiGs had varied during 1967/68 from slightly more than 100 to nearly 150, although only a fraction of these aircraft were serviceable at any given time. The number of these jets in-country also fluctuated in response to the frequency of the enemy's airfield attacks, which at times forced many MiGs to retreat beyond the Chinese border. In the spring of 1968, US intelligence reported as few as eight MiG-21s and seven MiG-17s flying from North Vietnamese airfields, while more than 100 enjoyed the security of Chinese bases. Vu Ngoc Dinh recalled;

‘We could hide hundreds of our aircraft at Xiangyun airfield in Yunnan Province. Every three months we went there to check their condition, using them to replace damaged ones at home. Do you know why China let us evacuate our aircraft to their airfields? Because they wanted to examine Russian-built aircraft. They used to take ours apart to study them.

‘Shelters represented another way to hide a large number of our MiGs. These shelters were dug in caves in the mountains near Noi Bai and later at Dua airfield, near Anh Son. These airfields had taxiways which were used to move aircraft to the shelters to hide them. But when they were hidden in shelters it took time to prepare them. Sometimes, we used Mi-6 helicopters to shift the MiGs into nearby forests. When aircraft were evacuated there they were usually hidden by trees and foliage.’

In respect to operations in Military District No 4, VPAF pilots also had to endure GCI difficulties in this area throughout the conflict due to the topography of central Vietnam. The US Navy exploited the Gulf of Tonkin by positioning search radar-equipped warships off the coast of central North Vietnam that could not only detect airborne VPAF aircraft across all of Military District No 4, but also shoot them down with their surface-to-air missiles if they strayed too near. Flying time in this area had to be restricted and all airfields continued to be subjected to repeated bombing.

The 921st FR increased training in low-flying and low-altitude interception in an effort to negate the effectiveness of shipborne radar, the regiment also changing the standard MiG-21 combat formation from a two-ship to ‘two plus one’. Pilots were encouraged to use their initiative, and they were given more information about enemy locations using codes and other secret communication

methods. Radio silence was imposed from the time aircraft took off, pilots having to set their radios to receive mode only. If they sighted the enemy visually at ranges as close as 10-15 km they could use their radios.



The most successful North Vietnamese fighter pilot of the war was Nguyen Van Coc. He is pictured here in the cockpit of his MiG-21PFM on 7 May 1968 – the date on which he shot down the VF-92 F-4B of Lt Cdr E S Christensen and Lt(jg) W A Kramer. This was the first F-4 to be downed by a MiG-21 over Military District No 4. Coc was among the group of VPAF MiG pilots who were trained to fly MiG-17s between 1962 and 1964, and he converted to the MiG-21 in the Soviet Union in 1965/66. His service with the 921st FR began in 1966, and VPAF records credit him with nine aerial victories during the war (*Nguyen Xuan At*)

In early May 1968 three MiG-21s flown by Dang Ngoc Ngu, Nguyen Van Coc and Nguyen Van Minh were sent covertly from Noi Bai to Tho Xuan. On the 7th Nguyen Dang Kinh and Nguyen Van Lung left Noi Bai in their MiG-21s to fly a diversionary mission towards Anh Son in Military District No 4. At the same time Ngu and Coc took off from Tho Xuan and flew at low altitude alongside Route No 15 in the direction of Do Luong. Coc explained what happened next;

‘Because of poor coordination with the ADF our MiGs were mistaken for American fighters and the AAA opened up on us. But this wasn’t the only mistake, as Ngu also mistook Kinh and Lung for American jets. Preparing for an attack, he dropped his fuel tanks, but soon recognised the aircraft as North Vietnamese. We made three circuits in a CAP over Do Luong before we were informed about real American fighters approaching from the sea. Ngu sighted

two F-4s on our right and, due to the very cloudy weather, he had to make a tight turn to attack. He was unable to get into a firing position, however.

‘I couldn’t follow him and was left seven kilometres behind. I was looking for him but was running low on fuel and wanted to land at Tho Xuan. At this moment I noticed a Phantom II ahead of me at an altitude of 2500 m. I went after it, launching two missiles from a range of 1500 m. The Phantom II crashed into the sea and we landed safely at Tho Xuan.’

Coc had shot down the F-4B of Lt Cdr E S Christensen and Lt(jg) W A Kramer of VF-92, which was embarked in USS *Enterprise* (CVAN-65). The MiG ace had bounced the Phantom II from the rear as its crew headed for the coast alone after they had run low on fuel following the dogfight with Coc and Ngu. The F-4’s demise represented the VPAF’s first aerial victory over Military District No 4. This battle also revealed to the Americans that MiG-21s were now operating in this area. Consequently, US Navy units in particular reviewed their tactics, re-aligning their attack formations and increasing the number of escorts in the trail formations. More F-4s were assigned to suppress the aerial threat and react quickly when attacked by MiGs.

Following the engagement on 7 May, MiG-21 pilots subsequently lacked the element of surprise in Military District No 4. This meant that when the MiGs approached US Navy attack formations, the enemy aircraft retreated. Furthermore, the MiG-21s had insufficient fuel for a viable pursuit of fleeing jets.

US Navy attack aircraft regularly targeted the airfields of Military District No 4 and used their carriers’ radars to control the southern airspace from Ninh Binh to Vinh Linh. Due to their initial lack of familiarity with the terrain in the south, the MiG pilots had to fly at sufficiently high altitude to ensure effective radar coverage when searching for enemy aircraft. Powerful air search radar fitted to US Navy ships offshore, on the other hand, was able to detect VPAF aircraft 60 to 80 km inland and provide guidance for intercepting aircraft and missile-equipped cruisers. Furthermore, US aircraft would escape seawards while trying to lure the MiGs towards their carrier group’s SAM umbrella.



On 22 September 1968 three MiG-21s were flying in the airspace over Military District No 4 when they were hit by RIM-8 Talos anti-radar homing missiles fired by the US Navy cruiser *Long Beach*. The fighter of Pham Thanh Ngan (pictured in cockpit) was only damaged, but Nguyen Van Ly and Vu Dinh Rang had to eject from their 'Fishbeds' (*Nguyen Xuan At*)

At this time most of the larger warships in-theatre were armed with RIM-8 Talos ship-to-air missiles, and the vessels moved in closer to the coast to improve their radar coverage of Military District No 4. The VPAF tried to attack them on five separate occasions, but achieved little for the loss of four MiG-21s. A fifth 'Fishbed' was claimed by the F-4B of Maj J P Hefferman and Lt(jg) F A Schumacher from VF-96, embarked in *Enterprise*, on 9 May, although it appears that their victim may have been either a communist Chinese jet or an aircraft from 'Doan Z', as there is no mention of it in VPAF loss records.

The remaining four MiG-21s were downed by Talos SAMs because their pilots were not sufficiently wary of the ships' surface-to-air missile capability and ADF-VPAF radar was not sophisticated enough to detect the missiles in order to warn them. The first of these losses came on 23 May when Ha Quang Hung's MiG-21 was downed by a Talos missile fired from USS *Long Beach* (CGN-9) – 105 km away – as he and Nguyen Van Coc were flying from Noi Bai to Tho Xuan. Hung ejected safely. On 26 June, another Talos from CGN-9 hit Vu Ngoc Dinh's MiG-21 as he flew over Vinh airfield, and he too was able to eject. Finally, on 22 September, Nguyen Van Ly, Vu Dinh Rang and Pham Thanh Ngan were flying over Military District No 4 when Talos missiles (again from *Long*



*Beach*, some 98 km away) hit all three MiGs. Ly and Rang had to eject from their stricken fighters, but Ngan's was only damaged.

Despite these losses, VPAF HQ ordered the MiG units to send aircraft from their primary air bases in the north to airfields in the south in order to oppose US fighter-bombers and their escorts in Military District No 4. The US Navy typically sent formations of eight to twelve aircraft in two or three waves to attack targets on a daily basis, with each bomber being allocated an escorting fighter. The 921st FR duly sent MiG-21s from Noi Bai to Tho Xuan, from where they would attempt to intercept US Navy aircraft over the Do Luong area.

On the afternoon of 16 June newly qualified MiG-21 pilots Dinh Ton (who had claimed three Firebee drones destroyed since 15 April 1968) and Nguyen Tien Sam took off from Tho Xuan and flew at 250-300 m above Route No 15 at 800 km/h. By the time they passed over Nghia Dan they had climbed to 1500 m (4875 ft), and it was then that the command post reported enemy aircraft in their proximity. The US Navy formation made a sudden 'S' manoeuvre south of Route No 7 and the MiG-21s turned right for Anh Son.



Dinh Ton claimed to have shot down a US Navy F-4J northwest of Vinh on 16 June 1968. Cdr W E Wilber and Lt(jg) B F Rupinski of VF-102 were flying a CAP mission from USS *America* (CVA-66), when their aircraft exploded following a hit from an R-3S. Ton began his pilot training in Czechoslovakia in 1957/58



and continued in Vietnam until 1961. He led the VPAF fighter pilot group that trained to fly MiG-21s between 1965 and 1968. VPAF records credit him with four victories during the war (*István Tópercz* archive)

A few minutes later Sam reported seeing AAA fire from a unit at Do Luong. Ton then sighted four F-4s at a range of ten kilometres. As the MiGs and the F-4s approached each other head-on, Ton saw three of them turning away. The fourth jet passed beneath the belly of his MiG, and he quickly reversed direction and went after the lone enemy fighter, which was already heading for the sea. Ton fired an R-3S from a distance of 1500 m and hit the Phantom II's tail. The F-4J from VF-102, embarked in USS *America* (CVA-66), burst into flames and Cdr W E Wilber and Lt(jg) B F Rupinski ejected. The command post then detected more American aircraft approaching the MiG-21, so they quickly landed at Tho Xuan.

VPAF fighter regiments continued to operate from Tho Xuan from June through to the end of August 1968, during which time they fought a number of aerial battles against intruding US Navy aircraft as they defended the strategic supply routes. The MiG-21 flown by ace Vu Ngoc Dinh fell to the F-8H of Cdr L R Myers from VF-51, embarked in USS *Bon Homme Richard* (CVA-31), on 26 June. Another 'Fishbed' was lost on 10 July after three jets, flown by Pham Thanh Ngan, Pham Phu Thai and Dang Ngoc Ngu, were scrambled from Tho Xuan. Although the VPAF had found that the 'two-plus-one' formation enhanced early warning, as well as improved the fighters' effectiveness when attacking large strike formations, on this particular occasion a lack of experience by GCI operators and pilots meant that no hits were achieved and the MiG-21 of Pham Phu Thai was shot down by an AIM-9. It had been fired from the VF-33 F-4J (embarked in *America*) flown by Lts R Cash and J E Kain. Thai ejected safely.

Despite this setback the 921st FR continued to operate its MiG-21s in threes. Nguyen Dang Kinh, Pham Van Mao and Nguyen Hong Nhi arrived at Tho Xuan on 31 July, and the next day they fought US Navy fighters over Do Luong. Kinh and Mao intercepted F-8 Crusaders from VF-111 Det 1, embarked in USS *Intrepid* (CV-11), that were escorting A-4s on a strike mission to Dong Dun, but the fighters accelerated away out to sea and the two MiG-21s returned to Tho Xuan.



Nguyen Hong Nhi, Pham Thanh Ngan and Nguyen Van Coc (pictured left to right) are seen exchanging views on how best to fight US aircraft in this 1968 photograph. In the background are two MiG-21PFMs that had been given an unusual camouflage of mottled dark green on the upper surfaces over a natural metal base. Nhi claimed an F-8 on 1 August 1968 over the Do Luong area, only to have the tables turned on him shortly thereafter when his MiG-21 was shot down by VF-51 Crusader pilot Lt N K McCoy. No F-8s were downed on this date, however, according to US Navy loss records (*Nguyen Xuan At*)

Meanwhile, Nhi pursued two more F-8s (that had been escorting an RF-8 on a photo-reconnaissance mission) and launched an R-3S at one of them. He did not wait to see the result – although he was credited with a kill – because another Crusader was heading towards him. Nhi immediately tried to increase his speed but his afterburner was not functioning. Flying at 750 km/h, he dived into cloud at 1800 m and emerged shortly after to attack another F-8. His second missile failed to fire, however, because of an electrical malfunction. At that moment Nhi saw two missiles heading straight for his aircraft and turned sharply to avoid them. Although they failed to hit his jet the explosion was close enough to cripple it and he had to eject over Thanh Chuong. F-8 pilots Lt N K McCoy of VF-51 and Lt(jg) G Hise of VF-53 (both embarked in *Bon Homme Richard*) had each fired a missile, but only McCoy was credited with the kill. US Navy records indicate that no Crusaders were lost on this date.

The battles of 1 August had shown the ‘two-plus-one’ formation to be an adequate tactic, even if the results had not been conclusive. However, from a tactical standpoint, this flight formation reflected the small number of jets then available to the VPAF. It was also clear that further development of the tactic was required. One handicap suffered by the pilots was that the MiG-21’s cockpit restricted forward vision, making it difficult for Kinh and Mao to sight the

enemy aircraft in good time. Nhi was flying at approximately 1000-1500 m above and 2000-3000 m behind them, so he had a wider field of vision and could pass information to them.

There was a change of command in early September 1968 when VPAF HQ officers for Military District No 4 were moved to Do Luong, while Tran Hanh was put in command at Tho Xuan, Pham Ngoc Lan from the 921st FR was made deputy head of the regimental command post.

The new arrangements were tested for the first time on 17 September when MiG-21s fought an aerial battle over Thanh Chuong and Do Luong. The US Navy had despatched aircraft to raid Military District No 4 targets, and Nguyen Van Coc and Pham Phu Thai were scrambled from Tho Xuan to intercept them. Contact came when they sighted a pair of F-8 Crusaders that were part of the barrier CAP mission covering the bombers. In the ensuing dogfight Coc flew five complete circles with an F-8 but could not get his aircraft into an attacking position. The two F-8s behind him launched their AIM-9s, but with no results. Coc broke off the combat and, finding he was not being pursued, returned to base. Once back at Tho Xuan, Coc's jet was examined by 921st FR groundcrew, who found 24 separate pieces of missile shrapnel embedded in the tail and flaps of the aircraft.

Thai, who would later claim five victories and be credited with four of them, had also been forced to fend off the attentions of two other F-8s. Both fired missiles at his MiG, but he evaded them and returned to Tho Xuan.

Two days later, however, another combat ended with the loss of a MiG-21. Due to an electrical fault, Dinh Ton could not launch his missiles, and his wingman, Vu Dinh Rang, was shot down by the VF-111 F-8C of Lt A J Nargi, who was flying a CAP from *Intrepid*.

Further attacks on Military District No 4 transport infrastructure were expected in October, and to counter them VPAF HQ Command ordered a further change of tactics. It was decided that two MiG-21s would concentrate on the F-4s while four MiG-17s were directed to attack F-8s, A-6s, A-7s and A-4s. The tactic was tested on the 26th when Nguyen Dang Kinh and Vu Xuan Thieu took off from Tho Xuan in their MiG-21s and streaked over Route No 15 at below 500 m. When enemy aircraft were detected over Nghia Dan, Kinh climbed to 3000 m and visually acquired the US Navy jets. As he banked to the left to attack the aircraft two F-4s spotted him and accelerated away towards the coast. In pursuit, Kinh launched two R-3Ss one after another, but did not wait to see the results. Following the attack, Kinh and Thieu headed for Do Luong, before

returning to Tho Xuan. Although Kinh claimed an F-4 destroyed for his last victory, according to US Navy records no aircraft were lost that day.

The MiG-21s had become progressively more effective during 1968, even though they were fighting over unfamiliar territory. Apart from the defence of Hanoi, the 921st FR had taken an active part in protecting ground transport moving through Military District No 4, as well as supporting front 'B' (South Vietnam) and front 'C' (Laos). The Americans, however, considered the MiGs less effective over Military District No 4, so they did not attach special importance to their operations there. It was true that the VPAF had indeed encountered problems in that area because of the proximity of US aircraft carriers and the topography of a region hemmed in by mountains on one side and the sea on the other. The weather was also unpredictable.



The senior leader of the VPAF's Soviet air force experts, Evgeny Nikolaevich Antsiferov, is pictured (middle) in discussion with technical ground staff after the test flight of MiG-21PFM 'Red 5009'. Antsiferov arrived in Vietnam in 1968 to support operations by the 921st FR at Noi Bai. The Soviet engineering groups assigned to the VPAF fighter regiments generally had ten to 12 members, which included pilots, engineers and flight controllers (*István Tóperczér archive*)

Nevertheless, ADF-VPAF command ordered the fighter regiments to continue deploying mobile forces against the enemy in Military District No 4, although operations mounted by both MiG-17s and MiG-21s were fraught with difficulty.

Despite generally flying at low altitude, they were still subject to detection by ship-mounted radar when taking off from Noi Bai, Tho Xuan or Vinh. And when VPAF aircraft appeared, US jets simply retreated seawards, returning to attack the MiGs when they were landing, and therefore at their most vulnerable. In one case, two MiG-21s had just landed at Anh Son when they were strafed, suffering serious damage before their pilots had even extricated themselves from their cockpits. On other occasions, US fighters waited to attack when the returning MiGs were low on fuel, resulting in some pilots having to eject when they ran out.

The VPAF had fought a total of 20 aerial battles from 14 June 1968 to the end of the campaign in Military District No 4, with MiG-21 pilots claiming 29 enemy aircraft destroyed for the loss of eight MiG-21s. Only one Vietnamese pilot died in air combat during this period.

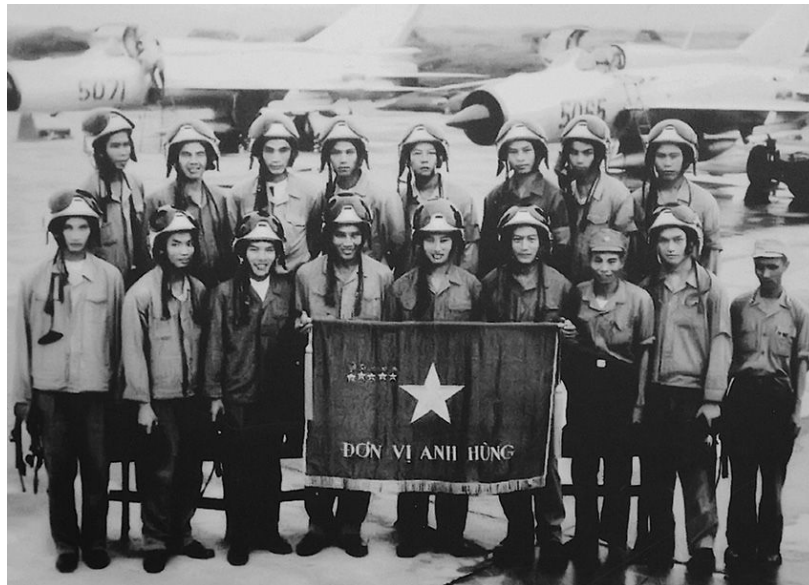
On 1 November the US government declared a bombing halt, followed by a ban on all overflights of North Vietnam, except by reconnaissance aircraft and drones. In the 1305 days of Operation *Rolling Thunder*, which ran from 3 March 1965 to 31 October 1968, the VPAF had flown 1602 missions and claimed 218 US aircraft (of 19 different types) shot down. The North Vietnamese used this lull to their advantage by concentrating on developing the VPAF. Naturally, the combat readiness of units such as the 921st FR was maintained during this period, but before the year was out the regiment would acquire a new and important task – intercepting enemy reconnaissance aircraft (including drones, nine of which would be downed by aces in 1968-69) and cooperating with ADF units in the continuing defence of supply routes in Military District No 4.

ADF-VPAF command had also studied the USAF's B-52 operations during *Rolling Thunder* and now planned to attack the big bombers with MiG-21s should they appear over North Vietnam again in the future. The study teams included pilots such as Dinh Ton, Pham Tuan, Vu Xuan Thieu, Hoang Bieu and Dang Xay. GCI officers were also involved, with a number of them climbing to the top of the 418-m high Mu Gia Pass on the Vietnam-Laos border to observe B-52s as they attacked the Ho Chi Minh Trail. The pass, which was the principal logistical route between North Vietnam and the Vietcong in South Vietnam, was the primary point of entry to the trail through Laos.

In early 1969 Soviet instructors arrived at Noi Bai to help train a new crop of North Vietnamese MiG-21 pilots. The Soviet pilots were also asked to undertake test-flying of jets after periodic maintenance and major repairs. Finally, North Vietnamese pilots made their first flights in two-seat MiG-21Us under Soviet

instruction and practiced live firing and bombing exercises under their watchful eye.

During the course of 1969 the number of flights by US reconnaissance drones and EW jamming aircraft increased, forcing the VPAF to develop new tactics to use against them. In subsequent exercises Soviet pilots performed the role of ‘drones’ while the North Vietnamese MiG-21 pilots were the ‘interceptors’. The ‘drones’ approached the base at low altitude from different directions, enabling the ‘interceptors’ to develop effective strategies to detect and shoot them down.



On 18 June 1969 the 3rd Squadron of the 921st FR was awarded the title of Hero of the People's Armed Forces, and here its members pose with their 'Uncle Ho' badges on a unit flag. Many future aces can be identified in this group shot. They are, front row, from left to right, Ngo Van Phu, Nguyen Van Nghia, Tran Hanh (CO), Nguyen Duc Soat, Vu Ngoc Dinh, Vu Van Ngu, unnamed technician, Luong The Phuc and another unnamed technician. In the back row, from left to right, are Nguyen Van Lung, Bui Duc Nhu, Dong Van Song, Nguyen Tien Sam, Le Toan Thang, Nguyen Ngoc Hung, Tran Viet and Pham Dinh Tuan (*István Toperczer archive*)

Night flying training was also undertaken during this period. The MiG-21 pilots also honed their tactics against the B-52s during both day and night missions by using Il-28s and Il-18s to simulate the big American bombers. MiG pilots practised detecting and attacking targets visually and by radar. Particular attention was given to night attacks on targets with and without lights and on moonless as well as moonlit nights. From March 1969 a few MiG-17s and MiG-21s were delivered to Vinh and Anh Son airfields, where training was organised

for future encounters in Military District No 4. In April a new MiG-21 conversion course was started for MiG-17 pilots, and ten 'Fishbed' pilots began bad weather and night training. The end result was an elite group of MiG-21 pilots that were ready to take off in any weather, climb to 10,000-12,000 m and attack the B-52s at high altitude, thus bypassing their escorting fighters.



Tran Hanh commanded the 921st FR between 1969 and 1972. On 4 April 1965, prior to his conversion to the MiG-21, he was serving as MiG-17 flight leader when he shot down a 354th TFS/355th TFW F-105D near Ham Rong Bridge (*Nguyen Xuan At*)

North Vietnam was rocked on 2 September 1969 by the announcement of Ho Chi Minh's death at the age of 79. That night VPAF senior officers chose the MiG-21 pilots to participate in a flypast over Hanoi's Ba Dinh Square to honour 'Uncle Ho'. They included Nguyen Hong Nhi, Mai Van Cuong, Dang Ngoc Ngu, Le Thanh Dao, Nguyen Duc Soat (all current or future aces) and Pham Phu Thai (subsequently credited with four victories). On 9 September 12 MiG-21s took off from Noi Bai and, after the funeral oration, crossed Ba Dinh Square in formation before returning home.

Later in the year new appointments were made to the VPAF top leadership. Col Dao Dinh Luyen was made commander, with Lt Col Tran Manh his deputy

and Tran Hanh and Le Oanh as deputy chiefs of staff. At the same time, HQ Command submitted a recommendation to the ADF-VPAF for changes in the deployment of air force units. As a result, MiG-19s and MiG-21s flew in from airfields in southern China to more than double the number of fighters based in North Vietnam from 55 to 126. The 921st FR remained at Noi Bai with its MiG-21s, but the 925th FR (newly equipped with MiG-19s) moved to Yen Bai, while the 923rd FR (MiG-17s) stayed at Kep. Tho Xuan, Anh Son, Vinh and Dong Hoi airfields were repaired and their runways lengthened to enable them to accept faster aircraft.

In 1969 more than 13,000 training flights were made by MiG-21 pilots, giving each of them an average of 46 hrs 17 min flying time per month. This in turn boosted the number of combat alert-qualified pilots by 30 per cent.

In 1970 the VPAF increased activities in the southern part of Military District No 4 to support troops fighting on the Laotian front and to stop USAF bombing of the border area. One early result was the loss of the 44th TFS/355th TFW F-105G flown by Cpts R J Mallon and R J Panek to AAA north of Mu Gia Pass on the afternoon of 28 January. The pair escaped when they ejected from their stricken aircraft, the USAF immediately ordering a SAR mission for the downed airmen. The MiG-21 pair of Vu Ngoc Dinh and Pham Dinh Tuan were on combat alert duty at Vinh at the time, and once scrambled they flew along Route No 15 until radar detected enemy activity over Khe Ve Bridge. Vu Ngoc Dinh recalled;

‘We kept radio silence until we reached the Mu Gia Pass. After ten minutes, our CO, Tran Manh, ordered a “hit-and-run” attack. We were climbing to 4000 m when Tuan spotted a flight of F-4s and I discovered two different aircraft. I covered him while he attacked the Phantom IIs twice. I spotted a helicopter flying very slowly in the same direction as me, but my speed was too high and I ran through the SAR formation. I turned right and fired my missile at a range of 1500 m. “I hit him!” I shouted. The helicopter disintegrated like a balloon that had been popped. My aircraft was flying so fast that I almost flew through the centre of the explosion.

‘I broke off and called Tuan. “34, where are you?” He replied “Roger”. I told him to turn to a heading of 360 degrees, but he replied “I am making a counterattack”. I called again, “Where are you?” but I got no reply. I reported to the command post that I had lost radio contact with Tuan. I went down to 500 m and flew back to Vinh. After landing, the engineers found many holes in my



MiG caused by fragments from my own missile because I'd made my attack from such close range.'



On 28 January 1970 Vu Ngoc Dinh claimed his sixth aerial victory when he shot down 40th ARRS HH-53B 'Jolly Green 71' flown by Maj H G Bell. All of the helicopter's crew were killed (*Nguyen Xuan At*)

Tuan did not return. The weather was poor, and he was killed when he crashed into a mountain while making his counter-attack. According to VPAF sources, he downed an F-4, but USAF records do not confirm this. An A-1H Skyraider was shot down by an SA-2 SAM, however, as it was searching for the downed F-105 pilots. Dinh's victim was an HH-53B Jolly Green Giant SAR helicopter from the 40th ARRS, its six-man crew being killed.



Vu Xuan Thieu and Do Van Lanh climb into the cockpits of their MiG-21PFMs and prepare for a training flight at Noi Bai air base in 1968. VPAF 'Fishbed' pilots were sent on courses at this time to practice flying at night and in bad weather, and individuals from this group were duly chosen for service in Military District No 4 and later for operations against B-52 bombers (*Nguyen Xuan At*)

On 28 March, CVW-14, embarked in *Constellation*, launched several air strikes on the airfield at Muong Xen following increased MiG activity in the area. Due to bad weather, the unit at Tho Xuan could not scramble any aircraft to defend the base, so four MiG-21s were hastily launched from Kien An instead. Two of the pilots had no combat experience whatsoever, and Pham Thanh Nam was shot down over Ninh Binh by the VF-142 crew of Lts J E Beaulier and S J Barkley, flying an F-4J.

During 1970 the MiG pilots based at Tho Xuan and Dong Hoi airfields, who had been trained in night flying, were given the task of protecting the strategic transport routes in Military District No 4, as well as controlling the airspace from Quang Tri Province to Route No 9 in southern Laos. That August, Dinh Ton (CO), Hoang Bieu, Vu Dinh Rang and Dang Xay were involved in studying B-52 operations in Military District No 4. After several days of research, they found a way to prevail against the high-flying bombers and, accordingly, formulated plans and organised training. Some ten pilots were subsequently qualified for night operations, including Nguyen Dang Kinh, Pham Tuan, Nguyen Khanh Duy, Bui Doan Do and Vu Xuan Thieu.



Dinh Ton was credited with two aerial victories against observation aircraft – namely an O-2 Skymaster on 13 April 1971 and an OV-10 Bronco one week later. Neither of these kills was corroborated by USAF loss records, however (*István Toperczer archive*)

In 1971, after studying the operations of USAF aircraft flying over the Ho Chi Minh Trail, VPAF intelligence and command officers assigned to forward command posts and mobile units were able to determine the operational patterns of O-2 Skymaster and OV-10 Bronco observation aircraft. VPAF HQ ordered the 921st FR to draft a plan for attacking these aircraft. This resulted in an attack on two O-2As during the afternoon of 13 April 1971 when the aircraft were detected south-southwest of Mu Gia Pass. Dinh Ton's MiG-21 duly took off from Tho Xuan and after 15 minutes he spotted the Skymasters and set off in pursuit, firing an R-3S missile at them. When he saw the AAM explode beneath one of the aircraft he then launched his second at the other O-2A – Ton claimed that he saw the second aeroplane spiralling down after his weapon detonated. With F-4s approaching from Laos, Ton broke off and flew back to Anh Son airfield. The enemy aircraft followed his MiG-21 to Do Luong before turning back. USAF records do not, however, confirm an O-2 loss on that day.

Seven days later an OV-10 was detected 30 km northwest of Dong Hoi. Having taken off from Anh Son, Dinh Ton claimed to have damaged the Bronco with an R-3S. After the incident he landed at Dong Hoi. On 10 May, MiG-21 ace Mai Van Cuong and future ace Le Thanh Dao took off from Tho Xuan to

intercept an OV-10 over Ky Son, on the Vietnam–Laos border area. Dao later recalled;

‘When my leader discovered the target I was about 300 m from his MiG-21. Cuong launched his R-3S and then the OV-10 shuddered, made two complete circles and flew straight again. Cuong wasn’t able to make another attack so he ordered me to do so. I’d never encountered any enemy aircraft before. After I fired my missile, I saw the warhead explode at the side of the target. The OV-10 spun a couple of times but continued flying. I fired my second missile but it exploded in front of the target without any result. I’d just returned from training in the Soviet Union, so I didn’t have much experience. I just remembered my instructor teaching me to wait for a clear audio tone before firing a missile, but to tell the truth I’m not sure whether or not I actually heard a clear audio tone that day.’



From 1969 to 1971 ‘Fishbed’ pilots were trained to fight B-52s, both day and night. With the help of MiG-21 and B-52 models, Pham Tuan (far right) demonstrates an attack manoeuvre to (seated, from left to right)

Vu Dinh Rang, Nguyen Khanh Duy and Bui Doan Do (*István Toperczer archive*)

In the second half of 1971 MiG-21 pilots attempted to attack B-52s on the Vietnamese–Laotian border. The bombers’ escort fighters proved impossible to penetrate, however, and the B-52s would usually turn back to the west as soon as the MiG-21s were detected taking off. The ADF-VPAF command decided to change the tactics being employed, and the experienced Dinh Ton (with four victories to his credit) was chosen to execute the new procedures. Shortly after sunset on 4 October he took off from Noi Bai and flew at an altitude of 100 m to

Anh Son and then on to Dong Hoi. From here he rapidly climbed to 10,000 m, but the VPAF's search radars were being jammed so they were unable to track the incoming B-52s and their escorts. The command post continued to guide Ton 'blindly', while he searched for the target both visually and using the MiG's radar. He eventually saw flashing lights from two B-52s flying at an altitude of 9000 m, and when he turned to attack them they turned off their lights and the F-4 escorts swept in towards his MiG-21. Unable to get within missile firing distance of the bombers, Ton broke off the pursuit and landed at Tho Xuan.

After evaluating Ton's attack, ADF-VPAF command ordered MiG pilots to remain below 1500 m – with no radio contact – at night while flying between the Dai Hue and Truong Son (Annamite) mountains. The command post also deployed a second MiG-21 to fly a diversionary mission. On 20 November Hoang Bieu's MiG-21 was on combat alert duty at Vinh, while another MiG-21 was at Anh Son with Vu Dinh Rang at the controls. At 1930 hrs B-52s were detected flying east of Savannakhet, in Laos. Bieu took off and headed towards Mui Gia Pass as a 'diversion', before flying back to Noi Bai. At 2045 hrs three B-52s were reported 60 km from Sepon, in Laos. A minute later Rang took off and climbed to 10,000 m. After ten minutes he was 15 km from the bombers, at which point he switched on his radar. At a range of 2500 m he fired an R-3S at a B-52, followed by a second missile moments later. One of these hit the bomber, which was forced to make an emergency landing in Thailand, while Vu Dinh Rang returned to Anh Son airfield at 2115 hrs.



Le Thanh Dao (left) uses a map to indicate the route of an up-and-coming flight to Dang Ngoc Ngu (right) in front of camouflaged MiG-21PFM 'Red 5017'. Dao claimed his first aerial victory during the afternoon of 18 December 1971 when he shot down the 555th TFS/432nd TRW F-4D of Maj K R Johnson and 1Lt S R Vaughan near Ban Pong Ban, in Laos (*Nguyen Xuan At*)

These attempts to shoot down B-52s, as well as an increased movement of North Vietnamese troops towards the south, prompted President Richard Nixon to warn Hanoi that bombing strikes would recommence if such activities continued. The USAF duly increased its fighter operations to counter these attacks, American jets frequently crossing the Vietnam–Laos border. From early December USAF fighter-bombers started to regularly violate the order that had prevented air strikes north of the 20th Parallel, and they increased their attacks on targets in North Vietnamese territory, including airfields in Military District No 4.

On 18 December the ADF-VPAF command decided to ensure coordination between MiG-21s, MiG-19s and SAM sites due to the escalation in American incursions. That day, the 921st and 925th FRs flew 24 sorties in three different waves. In the afternoon radar detected three groups of F-4s over Laos, and a section of two VPAF aircraft approached them over Quan Hoa, in Thanh Hoa Province. A MiG-19 pair was also scrambled from Yen Bai and flew over to Van Yen. Finally, Le Thanh Dao and Vo Sy Giap took off from Tho Xuan in their MiG-21s and flew up to Suoi Rut. The command post detected Phantom IIs flying towards Tho Xuan, and Dao and Giap were ordered to intercept them. The latter spotted a single F-4 15 km in front of him and he informed his leader, Dao, who increased speed and fired an R-3S from 1200 m. Dao then broke away, ordering Giap to make a follow-up attack. After seeing that the 555th TFS/432nd TRW F-4D of Maj K R Johnson and 1Lt S R Vaughan was on fire, Dao decided not to pursue the target. This was Le Thanh Dao's first aerial victory of the war.

Giap subsequently despatched a second Phantom II – from the 432nd – later that same day, Maj W T Stanley and Capt L O'Brien being rescued. A third F-4D from the wing was also lost during this mission (covering a failed SAR operation for Johnson and Vaughan, who were captured), although who shot down 1Lt K R Wells and Maj L L Hildebrand has never been ascertained.

Between the end of Operation *Rolling Thunder* on 1 November 1968 and 31 December 1971, MiG-21 pilots flew around 100 combat sorties, fought nearly 30 aerial battles and claimed 21 American aircraft downed, 15 of which were Firebee drones. Four 'Fishbed' pilots were killed during this period. The fighter

regiments received 156 MiGs during this time, and 72 of these fighters were assembled and placed on combat alert duty.

## WAR OF THE DRONES

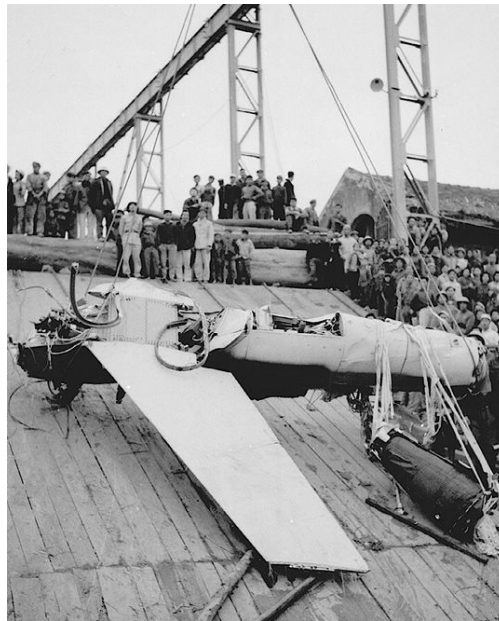
During the Vietnam War the use of unmanned aerial vehicles, or drones, became common over North Vietnam, especially for reconnaissance missions to monitor AAA and SA-2 sites. The AQM-34 Firebees were operated at both low and high altitudes, depending on the type of mission being flown and at what time of day or night. The highly upgraded AQM-34L flew no less than 1600 missions, and 251 drones were shot down over North Vietnam and China.



Nguyen Dang Kinh used an R-3S missile to shoot down a Firebee drone on 21 September 1968. Kinh was trained to fly the MiG-17 in the Soviet Union between 1961 and 1964 before switching to the MiG-21. His service with the 921st FR began in 1965 and in 1972 he transferred to the 927th FR. VPAF records credited him with achieving six aerial victories during air war (*István Toperczer archive*)

The 921st FR had started its fight against the drones in 1966 when the first Firebee was shot down on 4 March by an R-3S missile fired by Nguyen Hong Nhi from his MiG-21. Nguyen Dang Kinh claimed the second MiG-21 Firebee

kill over Bao Thang District near Lao Cai on 21 July 1966. A month later, on 13 August, Dang Ngoc Ngu also shot down a Firebee with his MiG-21. In 1966 MiG-21s shot down six Firebees, but only one in 1967, on 16 May, by Mai Van Cuong. During 1968 15 more drones were shot down by MiG-21 pilots including Nguyen Van Coc, Mai Van Cuong, Dang Ngoc Ngu, Nguyen Dang Kinh and Dinh Ton.



The AQM-34 (Ryan Model 147) Firebee was used for low-altitude photo-reconnaissance missions over North Vietnam, with a number being shot down by MiG-21 pilots from March 1966 to the end of the US involvement in the conflict. This example was shot down by a MiG-21 over North Vietnam in 1969, the drone's landing parachute having been deployed after it was hit (*István Toperczer archive*)

On one occasion, on 8 November, a drone was at an altitude of 300-500 m flying in from the South China Sea towards Viet Tri. The weather was poor, with a cloud base at 1500 m. Nguyen Van Coc took off at 0908 hrs when the Firebee was south of Noi Bai. At the same time, Dong Van Song and Luong The Phuc left Tho Xuan airfield. Their MiG-21s were directed over Cam Thuy and the drone turned left at Noi Bai, heading for Hoa Lac airfield. At 0912 hrs Coc climbed to 7000 m (22,750 ft) and a minute later detected a drone flying fast from right to left, below and ahead of him. He fired an R-3S but missed, and the drone turned left at Hoa Binh. At 0917 hrs GCI ordered the MiG-21 pair circling overhead Cam Thuy to accelerate to 1100 km/h and climb to 12,000 m. Two minutes later, Song and Phuc arrived over Gia Vien and sighted both the Firebee



and Coc's fighter. The MiG-21 pair reduced speed and followed them, maintaining a distance of seven kilometres. Coc fired his second R-3S and Song reported the Firebee was burning.

In 1969 VPAF fighters – mostly MiG-21s – were ordered on 540 occasions to intercept drones. The pilots involved claimed to have destroyed 12 AQM-34s. Between February and August such well-known MiG-21 pilots as Mai Van Cuong, Dang Ngoc Ngu, Nguyen Duc Soat and Nguyen Van Coc each shot down at least one drone. On 9 February a MiG-21 pair comprising Mai Van Cuong and Pham Phu Thai took off from Noi Bai to intercept a drone. It arrived from Cat Ba Island at an altitude of 500 m and then flew towards Hung Yen. The MiG-21s were guided to a holding area over Bac Ninh, and when the Firebee was ten kilometres east of Phu Xuyen the MiG-21s turned right and flew towards it. When it was six kilometres away Cuong sighted the drone and shot it down with an R-3S missile.

From 1970 the Americans changed the routeing of their drones. Instead of arriving from Laos and heading for Hanoi, they flew them in from the Gulf of Tonkin at low level to cover targets at Haiphong and along Route No 10. For the VPAF one result of this change was that its MiG-21s shot down only seven drones between 1971 and 1973.

## CHAPTER FIVE

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# LINEBACKER

By late 1971 the war situation was becoming more urgent for the North Vietnamese. US forces were hammering targets from the 20th Parallel northwards, with enemy reconnaissance aircraft ranging over the whole country by night and day. In an attempt to counter these incursions, ADF-VPAF command proposed to establish another MiG-21 regiment. Accordingly, pilots of the 921st FR were re-equipped with newly delivered MiG-21MF (*Izdeliye 96F*) 'Fishbed-Js', this variant being able to carry four R-3S AAMs on its underwing pylons and be equipped with an under-fuselage twin-barrelled 23 mm GSh-23L gun pack. By the beginning of 1972, all the regiment's pilots had converted to the new variant and the number of pilots qualified to fly combat missions in bad weather and at night had steadily increased.



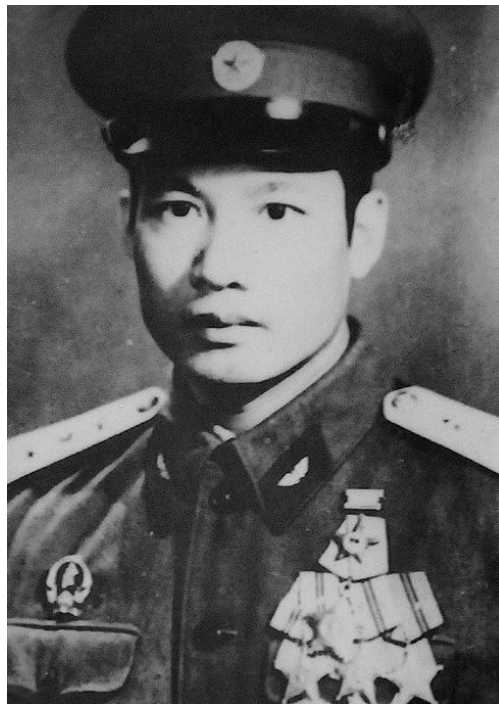
Bui Van Long, Le Thanh Dao, Nguyen Van Ly and Nguyen Hong My listen to their unidentified comrades talk about dogfighting techniques during January 1972. My claimed the first aerial victory of 1972 when he shot down the 14th TRS/432nd TRW RF-4C of Maj R K Mock and 1Lt J L Stiles on 19 January. USAF records list this loss for 20 January 1972, however (*Nguyen Xuan At*)

On 1 December 1971 Maj Gen Tran Quy Hai, Deputy Minister of Defence, signed order 226/QD-QP covering the establishment of the 927th 'Lam Son' Fighter Regiment at Tho Xuan airfield. The new unit was activated on 3 February 1972 and comprised two squadrons, the 3rd and the 9th, equipped with MiG-21PFMs. It was ordered to operate northwards from the 20th Parallel and was expected to be ready to support the 921st and 923rd FRs. The unit was directly subordinate to the 371st Air Division, and eight-victory ace Maj Nguyen Hong Nhi was its first regimental commander. Maj Nguyen Nhat Chieu and

Capt Nguyen Dang Kinh and Nguyen Van Nhien were appointed deputy regimental commanders.

To ensure the new unit quickly stabilised its organisation and enhanced its fighting power, ADF-VPAF command allowed it to be stationed at Noi Bai alongside the 921st FR. Most of the regiment's pilots had graduated in the Soviet Union in 1965 and 1968, although a few had qualified in 1970. Some were converting from the MiG-17. The most experienced and best-trained of them all were to form the nucleus of the 921st FR.

Although it had originally been intended that the 927th FR would be based at Tho Xuan airfield, the war situation in Military District No 4 rapidly deteriorated with an increase in the tempo of enemy attacks. Instead, ADF-VPAF command proposed that the 921st FR should move to Tho Xuan, with the 927th FR operating from Noi Bai to defend Hanoi and surrounding areas. Despite the doubling of the frontline MiG-21 force, only a single 'Fishbed' victory was achieved in the first quarter of 1972. Three pilots had to eject from their aircraft and two fighters were lost to friendly-fire during the same period.



The 927th 'Lam Son' Fighter Regiment was formed on 3 February 1972, with ace Maj Nguyen Hong Nhi as its first CO. Flying the MiG-21PFM, the unit operated north of the 20th Parallel in support of the 921st FR

*(István Toperczer archive)*

The first fratricidal incident occurred on 19 January. The day had started well enough when ADF-VPAF command ordered the 921st and 925th FRs to attack enemy aircraft west of Hoa Binh–Suoi Rut. This set up the first aerial victory to be achieved by a MiG-21MF when Nguyen Hong My shot down the 14th TRS/432nd TRW RF-4C of Maj R K Mock and 1Lt J L Stiles. USAF records list this loss as having happened over northern Laos the following day, however. That afternoon a pair of MiG-19s was in the holding area over Yen Bai when two MiG-21s, flown by Nguyen Duc Soat and Ha Vinh Thanh, were directed to engage enemy aircraft flying from Nghia Lo. Soat sighted two white-painted aircraft and asked the central command post, ‘Are you sure these aren’t friendly aircraft?’ The reply was emphatic. ‘They are *not* friendly aircraft!’ Soat fired an R-3S and saw an aircraft burst into flames. He then closed on the target and saw it was a MiG-19. He immediately ordered his wingman to break off the attack and the MiG-19 pilot ejected safely. The 925th FR had failed to inform ADF-VPAF command that the jets had left the holding area and were heading for the Nghia Lo–Van Yen area.

19 January also saw the first MiG-21 kill claimed by US forces since March 1970 when future US Navy aces Lt Randy Cunningham and Lt(jg) Willie Driscoll of VF-96, flying from *Constellation*, downed a ‘Fishbed’ while on a MiGCAP mission for a photo-reconnaissance flight over Quang Lang. Crews flying F-4Ds with the 432nd TRW were credited with the next MiG-21 kills on 21 February and on 1 and 30 March. March had also seen the VPAF suffer its second friendly-fire loss of the year. On the 3rd an Li-2 transport aircraft headed for Vinh with a group of 921st FR officers and engineers on board. Their final destination was Gat airfield, where they were to oversee preparations to make the site fit for air combat operations in support of the planned 1972 Easter Offensive. As the aircraft was preparing to land at Vinh it was hit by an SA-2 missile, killing 22 regimental officers. Among those to die was celebrated MiG-21 pilot Le Trong Huyen, with four confirmed victories to his name.



New MiG-21MF (*Izdeliye 96F*) 'Fishbed-Js' were delivered to the VPAF from December 1971, these aircraft being supplied to the 921st FR. By the beginning of 1972 all the regiment's pilots had converted to the type, after which the number of aviators qualified for combat operations at night and in adverse weather conditions steadily increased (*Nguyen Xuan At*)

In early March the 921st FR was ordered to Tho Xuan while the 927th FR moved to Noi Bai. Although the 921st continued operations with the MiG-21MF over Military District No 4 to the south, it was also available to support the 927st FR in the north. The western and northwestern regions were allocated to the 925th FR and its MiG-19s, while the eastern and northeastern regions were covered by the MiG-17s of the 923rd FR. US intelligence believed that more than 200 MiGs were operational during the 1972 Easter Offensive.

On 9 April the General Staff issued directive 22/CT-TM, ordering ADF-VPAF units to combat readiness. The next day, as if on cue, the arrival over North Vietnam of a large force of enemy aircraft signalled a new escalation of the air war, with raids on the Vinh–Ben Thuy area. Ham Rong Bridge and Tho Xuan airfield were the targets on the 13th. US reconnaissance aircraft were also active, especially over the airfields and the port of Haiphong. On the 16th it was the turn of the Duc Giang fuel storage depot, which was attacked by many aircraft, including B-52s, as was Haiphong again. All VPAF units took part in the day's action, flying 30 combat sorties. Three MiG-21s were lost (again to F-4Ds of the 432nd TRW), although their pilots ejected successfully.

Throughout this period of heightened combat the 927th FR continued to focus on pilot training. In particular, they received instruction on flying two- and four-ship formations and coordinating such flying between the two types of formation and with other regiments. Many young pilots joined their more experienced comrades in becoming instructors and flight commanders at this time. Included

in this number were future aces Le Thanh Dao, Nguyen Duc Soat and Nguyen Tien Sam.

Despite all of this training, the big challenge facing pilots new to frontline operations was how best to respond to the latest American equipment and tactics, as future ace Nguyen Van Nghia explained;

‘All the tactics and tricks used by the older MiG-21 pilots were available to us. Their experiences formed the basis of our lessons so we could explore all the MiG-21’s advantages. The fighter was well-suited to vertical flight. The aircraft gained speed very quickly and manoeuvred very well. Its most advantageous altitude was between 6000-8000 m. For example, when I fought the F-4 I found it could not manoeuvre as quickly as the MiG-21 because it weighed 27 tons, while the MiG-21’s total weight was only nine tons. The Phantom II’s optimum operating altitude was 4000 m, so we usually soared up to 6000 m while they usually dived down to 4000 m when we met in combat. We had to exploit the MiG-21’s best characteristics, even though it carried only two AAMs. From 16 April 1972 to the end of the air war we were very confident because we had been so well prepared.’



Successful pilots from two MiG-21 fighter regiments discuss their next training mission over a map in April 1972. They are, standing, Ngo Duy Thu (927th FR) and Tran Viet (921st FR), and squatting, from left to right, Le Khuong (921st FR), Nguyen Ngoc Thien (921st FR), Le Thanh Dao (927th FR) and Dang Ngoc Ngu (921st FR) (*Nguyen Xuan At*)

To bring some stability to the rapidly intensifying combat situation in the north the People's Army of Vietnam Command directed the VPAF to move the 921st FR from Tho Xuan back to Noi Bai. The regiment in turn left a reserve unit on standby both at Tho Xuan and Vinh. Once at Noi Bai, the 921st organised its training schedule to run in conjunction with the co-located 927th FR, while both regiments took it in turns to man jets on standby. Some aircraft were also placed on combat alert duty at Kep, Hoa Lac and Yen Bai, while jets held at Anh Son were moved to Mieu Mon. Technical personal at Vinh and Anh Son were divided between the 921st and 927th FRs. Mieu Mon, Cam Thuy (Thach Quang) and Anh Son were designated as the main reserve airfields, with ground staff on duty to maintain operational safety at these sites. Other airfields were capable of handling emergency landings, although runway surfaces varied from earth, clay and grass to pierced steel plank and paving.



Armourers of the 927th FR install an R-3S infrared-guided AAM on the APU-13 launch rail of MiG-21PFM 'Red 5034' at Noi Bai in May 1972. A direct copy of the AIM-9 Sidewinder, the R-3S could be launched at altitudes up to 21,000 m and had an effective range of 8000 m (*Nguyen Xuan At*)

After assessing recent enemy operations, VPAF HQ focused on bolstering AAA and SAM batteries in southwest Hanoi and the protection of Noi Bai, Yen



Bai and Hoa Lac airfields. It believed that these sites were key for the defence of important targets.

Revitalised by new equipment and better tactics, the USAF and US Navy had downed seven MiG-21s and a solitary MiG-17 without suffering a single casualty in the first four months of 1972. That all changed on 27 April, however. Hoang Quoc Dung and Cao Son Khao of the 921st had departed Noi Bai and set a course for Vu Ban. Soon after takeoff, they were vectored towards a pair of F-4Bs from VF-51, embarked in USS *Coral Sea* (CVA-43), that were on a MiGCAP mission. Flying at 2440 m six kilometres ahead of the MiG-21s, the Phantom II crews were themselves trying to spot the VPAF fighters when Dung fired an R-3S AAM from a distance of three kilometres that struck the jet of Lt A R Molinare and Lt Cdr J B Souder. The F-4B burst into flames and the crew ejected into captivity. This was the first time a US Navy aircraft had been downed by a MiG since June 1968.

There was more aerial action on 6 May when four MiG-21s of the 927th FR that were on combat alert duty at Noi Bai (with two others in reserve at Kep) were scrambled to engage US Navy fighter-bombers over Vu Ban. Nguyen Tien Sam, Nguyen The Duc, Nguyen Van Nghia and Le Van Lap attempted to engage the intruders but the combat situation was unfavourable to the defenders and they were ordered back to Noi Bai. It was while turning for home that Lap's jet was hit by an AIM-9G missile fired from the F-4J of VF-114's Lt R G Hughes and Lt(jg) A J Cruz, embarked in USS *Kitty Hawk* (CVA-63). The MiG pilot ejected safely. A second 'Fishbed' was claimed by VF-114's Lt Cdr K W Pettigrew and Lt(jg) M J McCabe, although VPAF records list only Lap's jet as having been destroyed.

Two days later, on 8 May, during aerial combat over Yen Bai involving MiG-19s of the 925th FR, two MiG-21s from the 921st were ordered to intercept USAF Phantom IIs heading for the Tuyen Quang area. Pham Phu Thai and Vo Si Giap tried to engage the enemy fighters but the latter's MiG-21 was hit by an AIM-7E-2 fired by the F-4D of Maj R A Lodge and Capt R C Locher of the 555th TFS/432nd TRW. Giap attempted an emergency landing, and although he managed to avoid hitting a school in his path his aircraft exploded when it crashed. He ejected, but suffered severe injuries and died in hospital three days later.

In the wake of the Easter Offensive launched by the People's Army of Vietnam on 30 March 1972, US aircraft had been attempting to disrupt the southerly progress of the invasion as part of Operation *Freedom Train*. Initially,

strikes were only allowed against targets south of the 19th Parallel, but on 9 May the USAF's Seventh Air Force and US Navy Task Force 77 launched an air interdiction campaign against targets north of the 20th Parallel. Codenamed Operation *Linebacker I*, this offensive, which continued until 23 October, meant that the whole of North Vietnam could now be bombed.



MiG-21PFM 'Red 5041' taxis in after a combat sortie with its brake parachute deployed, while an armed MiG-21MF is ready to take off from Noi Bai. 'Fishbed' pilots used to open their parachutes shortly after landing on the runway and then jettison them on the taxiway (*Nguyen Xuan At*)

On the first day the waters of Haiphong and other ports were mined, while more than 200 strikes were launched against Vinh, Tho Xuan, Hoa Lac, Yen Bai and Na San airfields. Ground transport infrastructure in the Hanoi and Haiphong areas was also attacked.

*Linebacker* signalled the introduction of new US tactics against the MiGs. The VPAF had quickly realised in early 1972 that its opponents had closely analysed the performance of its MiG fighters during the three years of virtual inactivity, and devised new tactics in order to negate the strong points of the Soviet-built designs. For example, when dealing with the MiG-21, F-4 crews were told to lure the 'Fishbed' pilot into a horizontal dogfight, and to avoid vertical manoeuvring. Flying with an increased combat spread of 900 m, a pair of Phantom IIs could keep a far better look-out for each other, and sound a warning in the event of an imminent MiG-21 attack. By this stage the Americans had also

discovered that the 'Fishbed' could out turn the F-4 at medium and high altitudes, but that the Phantom II had the advantage 'down low'. F-4 crews were duly instructed to dive to a lower altitude as soon as they encountered a MiG-21.

Both the USAF and the US Navy showed just how much their tactics had improved on 10 May when multiple aerial engagements were fought over North Vietnam. The USAF sortied more than 100 aircraft to saturate the defences by suppressing ADF positions and swamping defending fighters while its fighter-bombers attacked the Long Bien Bridge and Yen Vien railway marshalling yard. To counter this attack ADF-VPAF command deployed all three MiG fighter types in all four fighter regiments, together with SAM and AAA units. All focused on the area southeast of Hanoi, although Yen Bai airfield and Thac Ba hydroelectric plant were also covered. At 0830 hrs the enemy struck the Haiphong, Pha Lai, Son Dong, Bac Ninh and Luc Ngan areas.



Le Thanh Dao (right) demonstrates dogfight manoeuvres to his wingman, Vu Van Hop (left), on 10 May 1972 – the very day Dao shot down the VF-92 F-4J of Cdr H L Blackburn and Lt S A Rudloff, although US Navy loss records state that the jet was hit by AAA fire (*István Toperczer archive*)

Two 921st FR MiG-21s flown by Dang Ngoc Ngu and Nguyen Van Ngai were taking off from Kep when they were surprised by US Navy Phantom IIs. VF-

92's Lt C Dose and Lt Cdr J McDevitt, flying from *Constellation*, immediately downed Ngai's MiG-21, but Ngu managed to avoid their missiles and climb to 600 m. The F-4 crews had spotted his MiG-21, however, and gave chase. They turned sharp left before splitting up to begin a combat weave. Ngu sold them a dummy, appearing to chase the lower F-4, but the second Phantom II turned immediately to chase him. Ngu responded with a sharp turn that placed his fighter on the tail of this aircraft. The lower-level F-4 immediately turned back, but Ngu changed direction and latched onto the tail of the lower Phantom II instead. He fired one of his R-3S missiles and claimed to have hit the enemy fighter. Ngu then went after the higher-level F-4, attempting to launch his second missile at it. This failed to leave the MiG's right wing pylon, however. Ngu then broke off the combat and returned to Noi Bai. Although he was credited with an F-4 destroyed – his seventh, and last kill, US Navy loss records do not confirm his victory.

Meanwhile, American bombers were heading north of Hanoi, while a fighter group kept Noi Bai, Hoa Lac and Kep under observation. At 0944 hrs two 921st FR MiG-21s took off from Noi Bai with orders to distract enemy pilots in the Tuyen Quang area. Cao Son Khao subsequently claimed an F-4 destroyed, but his MiG was then accidentally hit by an SA-2 and he was killed. His victory was not confirmed by USAF records, which in turn attributed his loss to the F-4D of 1Lt J D Markle and Capt S D Eaves of the 555th TFS/432nd TRW. The MiG-21 of Khao's flight leader, Nguyen Cong Huy, also sustained damage from an AIM-7E-2, fired by another 555th TFW jet (the high-scoring crews of Maj R A Lodge and Capt R C Locher and Capt R S Ritchie and Capt C B DeBellevue were both credited with 'Fishbed' kills), although he was able to return to Noi Bai.

That afternoon the 927th FR MiG-21PFMs of Le Thanh Dao and Vu Van Hop were scrambled to intercept US Navy aircraft reported by radar to be heading from Hai Duong to Kep. Dao later recalled;

'We took off from Kep and turned left to head north, and then climbed to an altitude of 2000 m. When the enemy arrived west of Hai Duong and then turned right to Nam Sach, command ordered us to turn back south. The enemy was flying ten kilometres north of Hai Duong when we were ordered to fly a heading of 210 degrees and then, a minute later, to turn left on to 140 degrees to intercept them. I detected targets on my left. Hop also reported an F-4 on his left at a range of ten kilometres. The enemy also detected us and the F-4s split up.

'One of them turned left and passed under my MiG, while the other turned back and went into a climb. Hop turned sharply and got on the tail of the second

F-4. He fired one R-3S missile. He wanted to fire his second but saw the first had hit its target and that the F-4 was already on fire. Hop shouted, “He’s burning!” Because of heavy fire from our AAA units he was ordered to land at Kep. Meanwhile, I was chasing another F-4, and fired my first missile when the range was about 1500 m. I wanted to launch my second missile but saw my target was also on fire. I broke off and dived to low level and returned to Kep.’

Le Thanh Dao’s victim had been the F-4J flown by Cdr H L Blackburn and Lt S A Rudloff of VF-92 from *Constellation*. The US Navy claimed the aircraft had fallen victim to 85 mm AAA fire, but according to VPAF records, the kills credited to Dao and Hop represented the 927th FR’s first aerial victories. In fact, Hop’s victim was none other than the VF-96 jet of Lt Randy Cunningham and Lt(jg) Willie Driscoll, who had ‘made ace’ by downing three MiG-17s earlier in the mission. According to them, and US Navy loss records, their Phantom II had in fact been mortally damaged by shrapnel from an exploding SA-2.

The 10 May aerial battles demonstrated the VPAF’s growing strength. They also showed that coordination between units operating different MiG types was improving. According to VPAF statistics, the MiG-21s flew 18 sorties, shot down four US aircraft and lost just two ‘Fishbeds’ in return (seven MiG-17s had been destroyed, however), although US sources state that the F-4s shot down four in total.

There was no respite for either side on the 11th, with the 927th FR finding itself in the thick of the action once again. At 1440 hrs the USAF launched a 26-aircraft strike on Bac Mai airfield. Eight of these jets would attempt to neutralise the SAM batteries surrounding the base, while a further two flights of four aircraft monitored activity at nearby Noi Bai, Ba Vi and Hoa Lac airfields. Two pairs of MiG-21s from the 927th were scrambled from Noi Bai, with the attack pair of Ngo Van Phu and wingman Ngo Duy Thu flying at a height of just 500 m on a southerly heading for Hanoi. Meanwhile, the pair carrying out the deception flight headed for Tuyen Quang and Van Yen to engage the enemy over Hoa Lac and Yen Bai.

Two minutes into the flight Ngo Duy Thu detected a single US aircraft five kilometres away. Moments later, GCI ordered the flight to jettison its fuel tanks. The pair increased speed, and Ngo Duy Thu spotted a further four enemy aircraft off to his left at an altitude of 7000 m and a distance of 15 km. Ngo Van Phu was also aware of the aircraft and ordered his wingman to attack. Banking tightly to the right, Thu closed on the F-105G of Maj W H Talley and J P Padgett of the 17th WWS/388th TFW, launching an R-3S from a distance of just 1200 m and

shooting the Thunderchief down. Phu, meanwhile, had been involved in a tussle with four F-4Ds from the 555th TFS/432nd TRW that had been escorting the *Wild Weasel* F-105s, launching two R-3Ss in quick succession from a distance of 1500 m. One of the missiles hit the Phantom II of Lt Col J W Kittinger and 1Lt W J Reich, who were forced to eject – Kittinger had himself downed a MiG-21 on 1 March 1972.

As he attempted to break away from the remaining trio of Phantom IIs, Phu felt his MiG-21 shake violently as it was struck by an AIM-7E-2 fired by Capt S E Nichols and 1Lt J R Bell. Activating his SK-1 ejection system, Phu was shot clear of his stricken aircraft before drifting safely down to earth.

Analysis of the aerial battles of the first half of May, combined with interrogation reports of captured American pilots, led the ADF-VPAF command to conclude that the enemy was concentrating on destroying, or at least paralysing, its fighter force. F-4s loitered near the airfields to attack the MiGs as soon as they had taken off. Initially, there was confusion among the MiG pilots and ground controllers. Some interceptions were hastily undertaken as a result, with outdated tactics being employed and GCI and inflight organisation being deemed unsatisfactory. Furthermore, some of the equipment used (principally the now obsolete MiG-17 and, to a lesser extent, the short-ranged MiG-19) was not considered fit for purpose. Moreover, most pilots were inexperienced, and there was little communication between the fighter units once in the air.

The ADF-VPAF command held discussions designed to improve communications between the ADF (which controlled SAM and AAA sites, as well as GCI radar) and the VPAF. A new order of battle emerged in which intercepting aircraft were to fly at altitudes between 300-800 m, with covering and decoy flights well above them at 8000-10,000 m. Separation between the flights was to be maintained at 10 to 15 km, and while the decoy aircraft were to travel at just 900 km/h, the attacking jets were to fly at 1200 km/h. In accordance with the VPAF's attempts to improve its leadership strategy, the number of MiGs on combat alert duty was cut from 32 or 34 to 12 or 16 aircraft – it was felt that fewer aircraft were more manageable once aloft. The 921st FR was ordered to move to Gia Lam airfield, but to maintain a reserve flight at Noi Bai, while the 927th FR continued to perform combat duty at Noi Bai, Kep and Gia Lam.

Although the 921st had moved from Tho Xuan back to Noi Bai in early April, it continued to generate flights of MiG-21s at low altitude to surprise US aircraft crossing the Vietnam-Laos border in Military District No 4. On 20 May the 921st FR pair of Luong The Phuc and Do Van Lanh was on combat alert duty. At

1135 hrs radar detected eight enemy aircraft southeast of Xam Neua and then 12 more at Vu Ban heading for Suoi Rut–Viet Tri. The MiG pair followed Route No 1 to the south of Phu Ly and at 1153 hrs they turned west and climbed to 4000 m (13,000 ft). Five minutes later Phuc sighted two F-4s 15 km away. He tried to close in to attack but the Phantom IIs were manoeuvring vigorously. Phuc broke off and returned to Noi Bai.



On 20 May 1972 Do Van Lanh claimed his first aerial victory when he shot down the 555th TFS/432nd TRW F-4D of 1Lt J D Markle and Capt J W Williams over Vinh Phuc Province. Do Van Lanh trained to fly the MiG-17 between 1965 and 1968 with the 923rd FR and converted to the MiG-21 in Vietnam during 1970. He also began his service with the 921st FR in 1970, and VPAF records credit him with achieving four aerial victories during the war (*István Tópercz archive*)

Meanwhile, Do Van Lanh had spotted two more F-4s behind him, firing their missiles. He increased speed and climbed to 4000 m. Then he sighted a single F-4 ahead and set off in pursuit, launching an R-3S. He made a sharp left turn to break away and did not see his missile explode. Breaking off his pursuit of this aircraft, Lanh saw a pair of F-4s chasing Phuc and fired his second missile. This time he shot down the 555th TFS/432nd TRW F-4D of 1Lt J D Markle and Capt J W Williams for the first of his four official kills.

The US Navy continued its attacks on Haiphong, Kien An, Thai Binh and Route No 1 south of Phu Ly–Nam Dinh and Ninh Binh on the 23rd. That same day the VPAF HQ had deployed two 927th FR MiG-21 pairs to Gia Lam to

reinforce the MiG-19 and MiG-17 units there. At 1154 hrs one group of enemy aircraft turned for Day River and Nho Quan, while another arrived from Ba Lat River heading for Phu Ly. Two MiG-21s flown by Nguyen Duc Soat and Ngo Duy Thu took off from Gia Lam and headed for Hung Yen. The enemy aircraft had, by then, already dropped their bombs on Phu Ly and were now on their way back to the coast.

As Soat and Thu climbed to 10,000 m they were continuously informed about the enemy's location. The MiG pilots flew one complete circuit using the weave tactic before Soat sighted an A-7 Corsair II off to his right at a range of 7-8 km. He launched two R-3S missiles and shot down a VF-93 A-7B from USS *Midway* (CVA-41). Thu saw the enemy pilot eject from the crippled Corsair II southeast of Nam Dinh, the US Navy later claiming that the aircraft had been downed by a SAM and that Cdr C E Barnett had been killed. The MiG-21s broke off and returned to Gia Lam, where future ace Soat celebrated his first victory over a manned aircraft.

Three more MiG-21s were claimed by USAF Phantom II pilots following engagements on 23 and 31 May, the jets being credited to crews from the 366th TFW and 432nd TRW. Two of these successes gave the F-4E its debut kills in Vietnam.

In late May a conference was called to enable ADF-VPAF commanders and officers to analyse the lessons learned from the month's combat. The resulting study covered enemy tactics and manoeuvres, the VPAF's current status and its combat readiness, and included recommendations for correcting errors. The results were distributed to pilots with the objective of improving their success rate in the second half of the year. At the same time a new generation of Soviet-trained MiG-21 pilots (including Nguyen Duc Soat, Le Thanh Dao, Nguyen Tien Sam, Nguyen Van Nghia, Pham Phu Thai and Do Van Lanh) were certificated as combat-qualified. It was soon to become clear that they had learned their lessons well, as a handful of them had claimed sufficient aerial victories to achieve ace status by the end of the year.



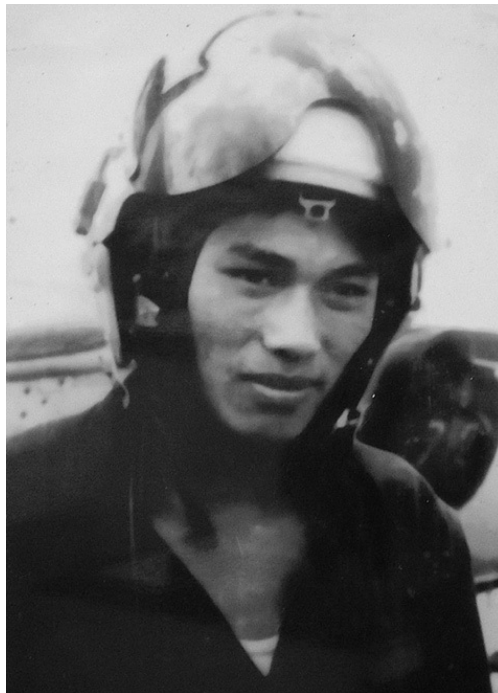


A Gia Lam-based MiG-21PFM pair from the 927th FR intercepted US Navy aircraft at Nam Dinh on 23 May 1972, Nguyen Duc Soat (left) claiming the VA-93 A-7B of Cdr C E Barnett destroyed. This kill was confirmed by Soat's wingman, Ngo Duy Thu (right), but US Navy records attributed the loss to an SA-2 missile (*István Tópercz archive*)

On 1 June US aircraft again arrived to attack Routes 1 and 2 as well as targets in the Hanoi area. In response the VPAF HQ ordered the 921st FR to intercept bombers heading for the Suoi Rut–Thanh Son–Van Yen area. Pham Phu Thai and Nguyen Cong Huy took off and climbed to 8000 m. Minutes later they turned south and Thai sighted F-4s 12-15 km away. They had been assigned to support the search and rescue operation to recover Capt R C Locher, who had been shot down by a MiG-19 three weeks earlier. Thai and Huy inverted their aircraft and dived down to 2000 m, the former firing an R-3S before breaking away. Seeing his missile explode behind the F-4E of Capts G W Hawks and D B Dingee from the 308th TFS/31st TFW, Thai continued in pursuit of the Phantom II and fired a second 'Atoll'. It was at that point that he discovered his pitot tube had been broken in his violent 9.5 G break-away manoeuvre after his first missile shot, and he returned to Noi Bai. The USAF attributed the F-4's loss to a SAM.

Pham Phu Thai claimed his next aerial victory on 10 June when he and his wingman, Bui Thanh Liem, attacked enemy aircraft south of Thanh Son. Thai and Liem were jointly credited with downing an F-4, although none were lost on this date according to US records.

On 12 June US Navy aircraft attacked the Do Len Bridge in Thanh Hoa, while another group raided the Luc Nam area in Bac Giang Province. A 927th FR pair of MiG-21s flown by Le Thanh Dao and Truong Ton took off from Noi Bai with orders to head for the Nha Nam-Dong Mo area. They accelerated and had climbed to 5000 m when Dao sighted four F-4s in the process of splitting up into two sections. The Phantom II crews also spotted the MiGs and turned sharp left. Dao fired an R-3S missile and claimed an F-4 destroyed, although again US Navy records fail to list any losses on this day.



Pham Phu Thai was among a group of VPAF pilots who trained to fly MiG-21s in the Soviet Union between 1965 and 1968, and he began his service with the 921st FR in 1968. According to VPAF records, he claimed his total of four aerial victories during June 1972 (*István Toperczer archive*)

Radar detected two groups of enemy aircraft heading from the Vietnam-Laos border for Yen Chau and Tuyen Quang on 13 June, and two 921st FR MiG-21 pairs, flown by Luong The Phuc and Do Van Lanh and Pham Phu Thai and Nguyen Cong Huy, were placed on combat alert. After takeoff Phuc and Lanh attacked USAF aircraft, Lanh firing two R-3S missiles and claiming an F-4 destroyed. Again, USAF records do not confirm his kill. The second MiG-21 pair, meanwhile, took off from Noi Bai and headed for the Son Duong–Dai Tu area. Climbing to 4000 m, Thai and Huy sighted four F-4s at a range of 12 km. The crews of these jets were preoccupied with their pursuit of MiG-19s, which

allowed the MiG-21 pilots to get in behind them undetected. Thai duly attacked two of the Phantom IIs and shot down the F-4E flown by 1Lts G O Hanson and R J Fulton of the 308th TFS/31st TFW over Tuyen Quang.

During the second half of June USAF aircraft concentrated on targeting traffic points and supply dumps along Route Nos 1, 2 (Yen Bai) and 3 (Thai Nguyen). On the morning of the 21st the 927th FR ordered a pair of MiG-21PFMs flown by Le Thanh Dao and Mai Van Tue to attack a formation over Ha Bac Province. Dao fought a prolonged battle with the F-4s, while his wingman, Tue, was shot down over the Son Dong area by Lt Col V R Christiansen and Maj K M Harden, flying an F-4E from the 469th TFS/388th TFW. A second MiG-21 was claimed by Cdr S C Flynn and Lt W H John of VF-31 while performing a MiGCAP for a late morning Alpha strike by CVW-3 from USS *Saratoga* (CVA-60).

That afternoon the 921st FR MiG-21MF pair of Luong The Phuc and Do Van Lanh were on combat alert at Noi Bai when radar detected enemy aircraft west of Son La. They both took off and headed for Thanh Son, where, after seven minutes, they spotted a flight of F-4s performing a chaff-bombing mission ahead of an approaching strike in an attempt to confuse Vietnamese radar. Phuc attacked them, firing two AAMs, but no results were observed. Lanh also launched two R-3Ss, and shot down the F-4E of Capt G A Rose and 1Lt P A Callaghan of the 334th TFS/4th TFW (attached to the 8th TFW) over the Red River near Phu Tho.



Do Van Lanh climbs into the cockpit of his natural metal MiG-21MF at Noi Bai for another mission. He used two R-3S missiles to shoot down the 334th TFS/4th TFW F-4E of Capt G A Rose and 1Lt P A Callaghan on the afternoon of 21 June 1972 over Phu Tho Province (*Nguyen Xuan At*)

Intelligence reports predicted that on 23 June the USAF and US Navy would make heavy strikes on the Hanoi area and on vital traffic points. Nguyen Van Nghia and Nguyen Van Toan were on combat alert duty at Gia Lam and, after taking off in their 927th FR MiG-21s, they turned over Xuan Mai and headed for Hoa Binh. When they sighted enemy aircraft the MiG-21s adopted the tactic of popping up through the clouds to attack the F-4s – American pilots had reported that from mid-June 1972 MiG-21 pilots had started using this new tactic: hiding in cloud cover at altitudes of 500 to 600 m. When GCI informed them of the proximity of targets the pilots climbed at full power to attack. Nghia fired an R-3S and reported seeing the F-4's wings engulfed in flame as it made its final plunge earthward. It was future ace Nguyen Van Nghia's first aerial victory, although it was not confirmed by USAF loss records.

Although the weather was poor on 24 June the USAF still despatched a large force to attack the Thai Nguyen industrial zone and other targets along Route No 1 between Lang Son and Hanoi. At 1529 hrs two 927th FR MiG-21s flown by Nguyen Duc Soat and Ngo Duy Thu took off and headed west. The enemy attack groups were sighted and pursued, Soat finding himself in an ideal firing position to launch an R-3S. The missile struck the 421st TFS/366th TFW F-4E of Capts D B Grant and W D Beekman as the jet flew 55 km west of Hanoi. Soat then turned his attention to the F-4 flight leader, but he found himself too close to fire a second AAM and broke off the attack and headed home to Noi Bai. Meanwhile, Thu had also achieved success, claiming a second F-4, although his kill was not confirmed by USAF records.

At 1542 hrs Nguyen Van Nghia and Nguyen Van Toan took off to provide cover for the returning Soat–Thu duo. The command post warned them of the presence of enemy aircraft between Yen Bai and Phu Tho at a range of 12 km, the MiG pilots subsequently attacking F-4Ds from the 25th TFS/8th TFW. Nghia launched his R-3S AAMs to shoot down the Phantom II of 1Lts J L McCarty and C A Jackson. Toan also managed to attack another F-4, but his missile failed to find its target. According to VPAF records, 921st FR pilot Pham Phu Thai also claimed an F-4 destroyed on 24 June, which again was not corroborated by USAF loss records. Finally, the MiG-21 pairs of Le Thanh Dao-Bui Duc Nhu (927th FR) and Do Van Lanh-Bui Thanh Liem (921st FR) shot down Firebee drones to round off a successful day for the defenders.

Early on 27 June more large strike formations attacked the Bach Mai command post complex and civilian targets, with enemy escort fighters flying a holding pattern southeast of Noi Bai and Gia Lam and southwest of Yen Bai. In

what was to be a day of major battles for the VPAF, MiG-21s from the 921st and 927th FRs were able to disrupt the USAF attack, and in doing so claim no fewer than five F-4s destroyed without loss. The 927th FR had placed two MiG-21 pairs on combat alert duty at Noi Bai, these jets being flown by Bui Duc Nhu and Ha Vinh Thanh and Nguyen Duc Soat and Ngo Duy Thu. At the same time, the 921st FR's Pham Phu Thai and Bui Thanh Liem were also on alert duty.



Future ace Nguyen Van Nghia was credited with his first aerial victory on 23 June 1972 and the second the following day. On both occasions he was officially credited with shooting down an F-4, although USAF records only confirmed his second victory, when he claimed the 25th TFS/8th TFW F-4D of 1Lt J L McCarty and C A Jackson. Nghia was trained in the Soviet Union between 1965 and 1968, after which he began his service with the 921st FR. He then transferred to the 927th FR in 1972. VPAF records credit him with achieving five aerial victories during air war (*Nguyen Xuan At*)

At 0842 hrs Nhu and Thanh took off to intercept enemy aircraft west of Hanoi. After they had detected four Phantom IIs below them, Nhu shot down the 308th TFS/31st TFW F-4E of Lt Col F J Sullivan and Capt R L Francis. The USAF claimed that they had fallen victim to an SA-2.



Do Van Lanh walks from his MiG-21 on 24 June 1972 after a successful mission in which he and his wingman, Bui Thanh Liem, intercepted a Firebee reconnaissance drone and shot it down. This kill was credited as a shared victory. In the background, 'Red 5066' displays a softly dappled camouflage of dark green over natural metal (*Nguyen Xuan At*)

Thai and Liem left Noi Bai at 0850 hrs and flew a holding pattern over Van Yen. However, the enemy aircraft were too far away and the MiG-21s returned to Yen Bai. At 0918 hrs and again at 1002 hrs a MiG-19 flight and a MiG-21 pair took off to orbit Gia Lam and the Nha Nam–Tuyen Quang area. They did not encounter enemy aircraft. About three hours later, several enemy groups were involved in attempts to rescue downed pilots. At 1153 hrs, Soat and Thu took off from Noi Bai to head for Moc Chau, while another MiG-21 pair, comprising Thai and Liem, was on its way to the Nghia Lo–Yen Bai area. Radar detected an enemy group turning back from Van Yen to Moc Chau, with more aircraft over the Vietnam–Laos border. Soat and Thu noticed four US aircraft flying in front of them, with four more sections approaching North Vietnamese airspace from the border. The MiG pilots climbed to 5000 m, and when the Phantom II crews realised that they were being chased they attempted to escape across the border. Soat launched two R-3S missiles, which hit the F-4E of Capts J P Cerak and D B Dingee from the 308th TFS/31st TFW.

Meanwhile, Thu was chasing another F-4 section, and he launched two R-3S AAMs to down a Phantom II, although his victory was not confirmed by USAF records. Soat returned to Noi Bai, but Thu ran low on fuel and had to land at Hoa Lac.



During 1972 additional earth revetments were constructed to protect the aircraft at Noi Bai and other airfields. Here, 921st FR groundcrew are seen manhandling a net-camouflaged MiG-21MF back into its shelter at the bottom of the hill close to Noi Bai. For concealment, foliage was spread over the canvas between poles (*István Toperczer archive*)

At 1159 hrs, after an enemy group heading for Moc Chau had been detected by radar, Thai and Liem took off from Yen Bai. They were directed to Na San at an altitude of 4000 m, before they turned left for Bac Yen. The MiG pilots used their radar to pick up two F-4s escorting a SAR mission below a solid undercast over Yen Chau, and they duly ambushed them while still masked by the clouds. Thai and Liem launched their R-3S AAMs and both F-4Es, flown by Capts L A Aikman and T J Hanton and Maj R C Miller and 1Lt R H McDow from the 366th TFW, were destroyed. Thai and Liem returned safely to Yen Bai.



According to VPAF records, on 27 June 1972 Pham Phu Thai-Bui Thanh Liem (921st FR) and Nguyen Duc Soat-Ngo Duy Thu (927th FR) (left to right) shot down four Phantom IIs from the 31st and 366th TFWs.

USAF records confirmed only three F-4E losses (*István Toperczer archive*)

27 June 1972 proved to be the USAF's worst day in terms of air-to-air casualties of the entire Vietnam conflict, as it had lost three aircraft without reply. These victories had been claimed by six young MiG-21 pilots whose average age was less than 24 and who had each logged fewer than 250 flying hours in 'Fishbeds'. They had fought successfully and used outstanding air combat techniques. It had been a black day indeed for the USAF.



## CHAPTER SIX

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# GATHERING MOMENTUM

During the aerial battles fought over North Vietnam in the summer of 1972 much energy had been expended on resolving problems within VPAF units. It was true that the Americans had constantly changed their tactics, but some of the issues that had afflicted the fighter regiments were deeply rooted within the VPAF, for a handful of unit commanders had contempt for the enemy, leading to overconfidence and, consequently, serious losses. The tactic of returning to the offensive immediately after a defeat was also criticised. The high command recommended that lessons should be learned from previous engagements to enable tactics to be revised before the next encounter. In July 1972, therefore, the ADF-VPAF command approved an order for further training programmes, primarily on the MiG-21MF, although MiG-17 to MiG-21 conversion training continued.



MiG-21PFMs of the 927th FR are prepared for their next sorties at Noi Bai air base in 1972. VPAF records credit 'Red 5025' with hitting an F-4 on 5 October, although USAF records do not confirm this. 'Red 5013' was used to claim victories over a US Navy RA-5C and an F-4 on 28 December 1972, although it was in turn shot down on the latter date by the VF-142 F-4J of Lt(jg) S H Davis and G H Ulrich (*Nguyen Xuan At*)

On 5 July US Navy aircraft attacked targets at Hai Duong, Hung Yen, Bac Giang and Bac Ninh, while the USAF raided Kep, as well as targets in the Thai Nguyen area. 927th FR MiG-21PFMs flown by future ace Nguyen Tien Sam and Ha Vinh Thanh took off from Noi Bai to fly over Ha Bac Province. When Thanh spotted four F-4Es (from the 34th TFS/388th TFW) at a range of 25 km, Sam ordered him to attack the two trailing aircraft. Thanh launched two R-3Ss that hit the F-4E of Maj W J Elander and 1Lt D K Logan. Sam, meanwhile, turned

sharply to pursue a Phantom II in the lead section. He fired two missiles at close range to shoot down the F-4E of Capt W A Spencer and 1Lt B J Seek, Sam's MiG-21 flying right through the debris of the explosion. The fighter's engine briefly cut out, although Sam was able to restart it and both MiGs were returned to Noi Bai. It was Nguyen Tien Sam's first of five aerial victories over the Phantom II (all of which would be corroborated by USAF loss records).

The rest of July would not be so successful for the MiG-21 force, with four of the five pilots shot down being killed. Three of those to perish fell on the 8th. In an attempt to avoid losses to friendly fire, ADF-VPAF command had instructed the MiG-21 flights stationed at Noi Bai, Gia Lam and Yen Bai to intercept enemy aircraft well beyond the operating areas of SA-2 and AAA units. Shortly after dawn on 8 July the 921st FR's Dang Ngoc Ngu and Tran Viet took off to intercept enemy aircraft at Yen Chau, but the US jets turned back and the MiG pilots were ordered to return to Noi Bai. At 0950 hrs radar detected another enemy group at Son La, heading for the Yen Bai and Thac Ba hydroelectric plants. Luong The Phuc and Do Van Lanh took off from Yen Bai, although they too were ordered to break off their pursuit when the enemy aircraft turned back. Meanwhile, several more enemy formations had arrived from the southwest of Hanoi. Pham Phu Thai and Bui Thanh Liem took off in their MiG-21's from Noi Bai but returned without sighting the enemy.



Ace-to-be Nguyen Tien Sam smiles for the camera after his first aerial victory on 5 July 1972. It was followed by a second on the 24th and a third on the 29th. On each occasion he was officially credited with downing F-4Es from the 388th and 366th TFWs. Sam was among a group of VPAF pilots trained to fly

MiG-21s in the Soviet Union between 1965 and 1968. He began his service with the 921st FR in 1968 and transferred to the 927th FR in 1972. VPAF records credit him with achieving five aerial victories – all Phantom IIs, whose losses are confirmed by USAF records (*Nguyen Xuan At*)

At 1015 hrs, for the second time that day, Dang Ngoc Ngu and Tran Viet left Noi Bai when enemy aircraft were detected north of Hoi Xuan. After ten minutes the enemy turned back at Hoa Binh and the command post ordered Ngu and Viet to follow them. At 1028 hrs Ngu detected four F-4s at a range of 15 km. When the range had shortened they attacked the Phantom IIs and Viet informed Ngu that two enemy aircraft were behind him. Ngu followed the leading F-4 and fired an R-3S missile at it before breaking away. His MiG-21 then overtook the F-4E of Capts R F Hardy and P T Lewinski from the 4th TFS/366th TFW, which, according to USAF records, fired four Sidewinder missiles in quick succession at the MiG. All missed. The F-4 crew then launched two Sparrows and these hit Ngu's MiG-21MF ('Red 5118'). Ngu did not eject, and was killed when his aircraft crashed in Hoa Binh. Post-war investigation suggested that Ngu, a seven-victory ace, had, in fact, probably ejected from his crippled MiG, but that his parachute had not fully opened.

Viet, meanwhile, had detected another pair of F-4s and fired an R-3S at them, although he had failed to see any observable results. He turned right to follow another Phantom II pair, and this time he downed the 4th TFS/366th TFW F-4E of Lt Col R E Ross and Capt S M Imaye 60 km southwest of Hanoi. With just 450 litres of fuel left in his tanks, Viet landed safely at Hoa Lac. The same day two other 927th FR MiG-21 pilots were killed in aerial combat, falling to the future USAF ace pairing of Capts Steve Ritchie and Chuck DeBellevue of the 555th TFS/432nd TRW. Another MiG-21, this time from the 921st, was lost on 18 July to Lt Col C G Baily and Capt J S Feinstein of the 13th TFS/432nd TRW, the pilot successfully ejecting but then being mortally wounded when he came down in a tree.

On 24 July two 927th FR MiG-21 pairs were scrambled, Nguyen Tien Sam and Ha Vinh Thanh from Noi Bai and Le Thanh Dao and Truong Ton from Gia Lam. Sam and Thanh headed at 500 m for Hiep Hoa and then climbed to 4000 m over Nha Nam. When Thanh detected eight F-4s Sam ordered him to attack. The latter also fired two R-3S missiles and shot down the 421st TFS/366th TFW F-4E of Capt S A Hodnett and 1Lt D Fallert near Kep. Thanh had also launched two R-3Ss but missed. The command post then ordered the MiGs to break off northeast of Thai Nguyen. Sam landed on the main runway at Noi Bai, while

Thanh used the taxiway. Meanwhile, Dao and Ton were involved in an engagement south of Hanoi, Dao chasing an F-4 towards the sea and managing to shoot it down, while Ton claimed another Phantom II. Neither of these losses was confirmed by US records, however. After the engagement, Dao returned to Noi Bai while Ton landed at Kep.



On 8 July 1972 Snr Capt Dang Ngoc Ngu's MiG-21MF was shot down by the 4th TFS/366th TFW F-4E of Capts R F Hardy and P T Lewinski over Suoi Rut, in Hoa Binh Province. Although he ejected from his aircraft, Ngu's parachute did not bring him down to a safe landing and he was killed (*Nguyen Xuan At*)

A battle of rapidly changing fortunes was fought on 29 July. Nguyen Tien Sam and Nguyen Thanh Xuan took off from Noi Bai and were directed east of Kep. During the ensuing engagement, Sam shot down the F-4E of Capts J D Kula and M K Matsui from the 4th TFS/366th TFW, but his wingman in turn fell victim to Lt Col G E Taft and Capt S M Imae from the same unit over Huu Lung. Moments later, Lt Col C G Baily and Capt J S Feinstein of the 13th TFS/432nd TRW claimed a MiG-21 in their F-4D while on a MiGCAP mission. However, recent research suggests that Kula and Matsui may well have been downed in error by Baily and Feinstein, who mistook their F-4 for a MiG-21. Sam had seen the crippled 4th TFS jet and thought it was his own kill, while Xuan had fallen to Taft and Imae. Official VPAF records state that the 927th claimed one victory and suffered a single loss.

The following day, according to USAF records, three F-4Ds were lost over North Vietnam. While flying a CAP mission, the 523rd TFS/405th FW Phantom II of Capts G B Brooks and J M McAdams was damaged by an AAM fired by future ace Nguyen Duc Soat of the 921st FR. The crippled aircraft headed for the Gulf of Tonkin, but its crew had to eject 60 km east of Thanh Hoa.

August was also a bad month for the MiG-21 regiments, with five 'Fishbeds' shot down (all by Phantom II crews, with four to the USAF and a solitary kill to US Navy unit VF-103, flying from *Saratoga*) and two pilots killed. In return, only a single victory was credited to the MiG-21 force. That came on the 26th when Nguyen Duc Soat and Le Van Kien took off from Noi Bai and sighted two Phantom IIs at a range of 15 km approaching from Laotian airspace. Soat fired an R-3S, which hit the F-4J of 1Lts S G Cordova and D L Borders from VMFA-232. This aircraft, assigned to Marine Air Group 15 at Nam Phong, in South Vietnam, was the only US Marine Corps F-4 lost in an aerial engagement over North Vietnam. While attempting to return to base Kien's MiG ran out of fuel and he ejected safely near Gia Lam.



Le Thanh Dao shot down the 335th TFS/4th TFW F-4E of Capts B M Ratzlaff and J D Heeren northeast of Kep air base on 11 September 1972 with an R-3S missile fired from his MiG-21PFM. Dao was trained in the Soviet Union between 1965 and 1968, after which he commenced his service with the 921st FR. He transferred to the 927th FR in 1972. VPAF records credit Dao with six aerial victories (*Nguyen Xuan At*)

The MiG-21 force enjoyed a more fruitful time in terms of aerial success during the autumn of 1972 when its pilots were credited with 11 victories – 13 MiG-21s were claimed by Phantom II crews in return. During this period the 927th FR was re-equipped with the MiG-21MF (96F) in place of the PFM (94A). There was also a renewed focus on training, with newly graduated pilots returning from the Soviet Union being divided into three squadrons. They were joined by the most seasoned pilots in the frontline, together with aviators from the 921st's 5th Squadron, which had received night-flying training. The newest pilots made up the 9th and 11th squadrons, commanded by Nguyen Van Tho and Bui Duc Nhu.

In early September USAF aircraft targeted Route Nos 1 and 2, while US Navy jets were active over the Hon Gai, Quang Ninh and Thanh Hoa areas. On the 9th the USAF sent strike forces to hit transport hubs along Route No 3 and in Thai Nguyen, while US Navy aircraft continued their attacks in the Haiphong area. The 921st FR scrambled Luong The Phuc and Do Van Lanh from Noi Bai at 1022 hrs to attack the enemy aircraft, the former launching an R-3S that hit the F-4E of Capts W J Dalecky and T M Murphy of the 307th TFS/31st TFW, the fighter nosing over and diving away. By then Phuc's MiG-21 was running low on fuel, and as he tried to land at Kep he was shot down by Capt C B Tibbett and 1Lt W S Hargrove of the 555th TFS/432nd TRW, who used their F-4D's pod-mounted M61A1 Vulcan cannon to despatch the MiG. Lanh, meanwhile, had also fired two missiles at the damaged 307th F-4E, hitting its tail and forcing the crew to eject. The USAF, however, claimed the jet had been shot down by AAA.

At the same time, a pair of MiG-21s from the 927th FR, flown by Le Thanh Dao and Mai Van Tue, took off from Gia Lam to pursue the American aircraft. According to VPAF sources, Dao saw an F-4 trailing smoke after his missile hit it, but US records did not confirm this loss. Le Thanh Dao claimed his next victory two days later after he was scrambled with Tran Van Nam from Noi Bai to cover Route No 1 and intercept formations northeast of Kep. Dao sighted four aircraft on his right and shot down the F-4E of Capts B M Ratzlaff and J D Heeren of the 335th TFS/4th TFW (attached to the 8th TFW) over Dong Mo. Nam also launched his R-3S missiles which hit another F-4, but its loss was not confirmed by USAF records.

In the late afternoon Dinh Ton and Soviet instructor Vasily Motlov were returning from combat training in an unarmed MiG-21US when they were warned about four F-4Js from VMFA-333, embarked in *America*, lurking just eight kilometres from Noi Bai. The Phantom II crews made two attacks on the

lone MiG, launching a total of four Sidewinders at it, but Ton and Motlov were able to avoid them with defensive manoeuvres using full afterburner. With only 100 litres (22 gal) of fuel left, Motlov had no other choice but to eject, and he ordered Dinh Ton to do the same. He then put the aircraft into a climb, but the engine stopped when it had reached 500 m. Moments later an AIM-9 missile hit the rear fuselage section, although by then both men had ejected safely. According to US Marine Corps records, the aircraft had been shot down by Maj L T Lassiter and Capt J D Cummings.

It was during combat on 12 September that US forces lost their 3900th aircraft over North Vietnam, according to VPAF records. The victory was claimed by Nguyen Tien Sam of the 927th FR, who, together with Nguyen Van Toan, had been scrambled from Kep at 0941 hrs to intercept eight F-4Es detected over the Luc Ngan District in Bac Giang Province. Sam sighted his target and launched an R-3S missile while his MiG was travelling at close to Mach 1.0. The weapon flew straight into the Phantom II of Capts R V Zuberbuhler and F C McMurray from the 335th TFS/4th TFW (attached to the 8th TFW). The jet immediately burst into flames. Sam then returned to Noi Bai, but his wingman, Toan, fell victim to Lt Col L L Beckers and 1Lt T M Griffin of the 35th TFS/388th TFW. Toan ejected over Kep airfield. That same day, the 921st FR's Pham Phu Thai and Le Khuong were scrambled from Gia Lam, but Le Khuong's MiG-21 was shot down by the F-4D of Capt M J Mahaffey and 1Lt G I Shields of the 469th TFS/388th TFW. A third MiG-21 was credited to the F-4E of Maj G L Retterbush and 1Lt D L Autrey of the 35th TFS/388th TFW.

Summarising the air battles of September, the two MiG-21 units claimed six F-4s between them for the loss of five 'Fishbeds' (six were claimed by US forces). All their pilots ejected safely.

In the first few days of October the 927th FR's morale received a boost with another run of air combat successes. On the afternoon of the 1st, Le Thanh Dao claimed an F-4 kill over Chiem Hoa, in Tuyen Quang Province, although US records fail to acknowledge any loss for that day. On the 5th, Bui Duc Nhu and Nguyen Tien Sam took off from Noi Bai to attack USAF fighter-bombers over the Dong Mo area, although they were eventually recalled by ADF-VPAF command and told to land at Yen Bai, where they were to stand combat alert duty. That afternoon, radar detected enemy aircraft coming from Moc Chau and heading for Yen Bai. Nhu and Sam were scrambled and quickly sighted USAF aircraft. Nhu fired an R-3S which hit a Phantom II, although USAF records do not confirm its loss. Meanwhile, Sam spotted two F-4Ds flying behind Nhu's



MiG and launched two R-3Ss at them. The aircraft of Capts K H Lewis and J H Alpers from the 335th TFS/4th TFW (attached to the 8th TFW) was seen to burst into flames, its crew ejecting north of Yen Bai. The MiG-21s returned safely to Noi Bai, Sam having become an ace.

On the 6th a MiG-21 pair from the 921st FR at Kep, together with a MiG-19 pair from the 925th FR at Gia Lam, were ordered to defend Route No 1. At the same time, the 927th FR stationed the MiG-21 pair of Nguyen Van Nghia and Tran Van Nam at Noi Bai. They were scrambled at 0849 hrs and turned to head northwest of Thai Nguyen. When the enemy was engaged at Son Duong, future ace Nghia attacked with two R-3S AAMs. His second missile damaged the F-4E of Capts J P White and A G Egge of 307th TFS/31st TFW (attached to the 432nd TRW). They later ejected near the Thai-Laos border. Nam, meanwhile, pursued another enemy aircraft and fired two missiles at it. His second R-3S exploded beneath the F-4E of Lt Col R D Anderson and 1Lt G F Latella of the 25th TFS/8th TFW. The USAF, however, claimed that the jet had fallen victim to a SAM unit west of Hanoi.



MiG-21 ace Nguyen Duc Soat claimed his sixth aerial victory when he shot down the 469th TFS/388th TFW F-4E of Capt M A Young and 1Lt C H Brunson on 12 October 1972. Soat was among a group of VPAF MiG pilots trained in the Soviet Union to fly the MiG-21 between 1965 and 1968. He then joined the 921st FR, transferring to the 927th FR in 1972. VPAF records credit him with six aerial victories (*Nguyen Xuan At*)

On the 8th Nguyen Van Nghia and Duong Dinh Nghi attacked Phantom IIs over Yen Bai–Tuyen Quang. Flight leader Nghia shot down an F-4, but its loss was not confirmed by USAF records. Meanwhile, Maj G L Retterbush and Capt R H Jaspersen of the 35th TFS/388th TFW used their F-4E's 20mm cannon to set Nghi's MiG-21 on fire, forcing the pilot to eject – this was Retterbush's second guns kill over a 'Fishbed'. Nghi's jet was one of seven MiG-21s credited to USAF F-4s during combat in October.

Shortly after the demise of Nghi's jet, Nguyen Van Nghia found himself in an unexpected situation. Another F-4 had made a sharp left turn towards his MiG, at which point Nghia broke right to avoid a collision;

'I dived to an altitude of just 15-20 m and flew very fast from Thai Nguyen to Noi Bai, where I landed. I was pursued all the way by four F-4s. They fired missiles and 20 mm shells at me but all missed. At such an altitude the enemy dared not fly lower than me so they had to shoot from above. This meant that heat-seeking missiles would be misled by the heat from the ground, while radar-guided missiles would have their guidance systems jammed by the ground clutter. And firing their cannon at me was just a waste of ammunition since my flying speed was about 1300 km/h, ruling the gun out as an option.

'Why did I usually fly low when returning from an engagement? The most important thing was that a pilot had to be clear about his location, but the main reason was that I wanted to avoid "friendly fire". Misidentification by the ADF was commonplace during the war. When I flew low, the AAA batteries could not depress their weapons to shoot at me. However, I had to be careful of militiamen with rifles. To avoid them I never flew over the entrance to any village.'

Nguyen Duc Soat had a good day on 12 October, but his success was followed by a run of losses for the MiG-21 units during the second half of the month. Aces Soat and Nguyen Tien Sam had been scrambled from Noi Bai and sighted F-4s north of Son Dong. Soat got in behind a group of fighter-bombers while the escorting fighters concentrated on chasing Sam's MiG. When Soat had found a suitable firing position he launched an R-3S. Breaking away, he inverted his aircraft to see that the 469th TFS/388th TFW F-4E of Capt M A Young and 1Lt C H Brunson was on fire. Meanwhile, his wingman had been forced to eject from his fighter after it departed controlled flight during overly aggressive manoeuvring with the 555th TFS/432nd TRW F-4D of Capts J A Madden and L H Pettit. Sam had blacked out during a high-G turn, and when he regained consciousness he ejected.

Le Thanh Dao and Mai Van Tue from the 927th FR were involved in an aerial engagement over Thai Nguyen during the afternoon of the 13th, with the MiG-21 of the latter pilot being shot down by Sparrow missiles fired from the 13th TFS/432nd TRW F-4D of Lt Col C D Westphal and Capt J S Feinstein.

On the afternoon of 15 October two pilots from each of the MiG-21 regiments were forced to eject. Capts G M Rubus and J L Hendrickson from the 307th TFS/432nd TRW were heading northwest of Hanoi in their F-4E when they intercepted the 927th FR MiG-21s of Le Thanh Dao and Tran Van Nam. The USAF crew used their 20 mm cannon to down the 'Fishbed' of ace Dao, who, after ejecting from his crippled fighter, descended in his parachute with the other MiG-21s circling around him. He subsequently recalled;

'We took off from Noi Bai and climbed to 3500 m towards Ba Vi. We discovered the enemy Phantom IIs and intercepted a pair of aircraft. I prepared to launch my missile but at this moment another F-4 hit my MiG-21. I had to eject immediately. When I was descending in my parachute a Phantom II fired a burst from its cannon that put many holes in my parachute. Consequently, I hit a big rock at high speed when I landed. Both my legs and vertebra were broken. I also hurt my head and was unconscious for two days. The local people made a stretcher from my parachute and transported me a distance of nine kilometres, where a Mi-6 helicopter picked me up and took me to hospital. I was in Military Hospital 108 for four months. Then I returned to my unit, but it was a year before I was able to fly again.'

Shortly after Dao was shot down the 34th TFS/388th TFW F-4E of Maj R L Holtz and 1Lt W C Diehl downed Pham Phu Thai's 921st FR MiG-21 with an AIM-9E missile. After he ejected Thai was threatened by four F-4s, but he managed to avoid being shot at and landed safely.

On 22 October President Richard Nixon announced the suspension of bombing north of the 20th Parallel. At the same time, new operations were planned against the southern territories liberated by the North Vietnamese, while B-52s attacked transportation routes in Military District No 4.

Almost two months later, on 14 December, Nixon gave his approval for a plan to attack Hanoi and Haiphong with B-52s in an effort to bring the North Vietnamese government back to the peace talks that they had stormed out of 24 hours earlier. The offensive, known as Operation *Linebacker II*, was launched on 18 December, and it also involved the USAF's Seventh Air Force and the US Navy's Task Force 77. Lasting until 29 December, it was known by several

informal names including 'Dien Bien Phu in the Sky'. More importantly, it was the war's final bombing campaign.

On 17 December all North Vietnamese units north of the 20th Parallel were ordered to go on Quick Reaction Alert (Class I) from 1940 hrs the next day. B-52s and fighter-bombers launched attacks on a range of targets, including Noi Bai, Gia Lam, Kep, Hoa Lac and Yen Bai airfields. F-111s made low-level bombing attacks on the airfields, while the F-4s used electronic counter measures against radar units. Attacks on the port of Haiphong were resumed. The MiG-21MFs were on combat alert at Noi Bai, Kep and Hoa Lac airfields, with their pilots ready to take off with up to six minutes notice during the day and seven minutes at night.

ADF-VPAF command also approved a counter-B-52 plan, with 12 pilots including, eight trained for night missions, being briefed to carry it out. Some 921st FR pilots moved to reinforce the 927th FR, which had responsibility for operations against the strategic bombers. Although the MiG-21 pilots were scrambled to attack the B-52, none were able to hit any of them between 18 and 20 December. Conversely, USAF records note that B-52D tail gunner SSgt S O Turner of the 307th SW claimed a MiG-21 shot down on the 18th and A1C A E Moore, from the same unit, was credited with a 'Fishbed' kill six nights later, although VPAF records do not confirm any such losses.



Nguyen Van Nghia claimed to have shot down a Firebee drone on 24 November 1972 and then an F-4 on 23 December. The Phantom II represented Nghia's fifth aerial victory, although it was not confirmed by US loss records (*Nguyen Xuan At*)

On 22 December Nguyen Duc Soat and Nguyen Thanh Quy from the 927th FR took off from the taxiway at Noi Bai to intercept F-4s approaching from Laos. None of the intruders were shot down, but Quy's MiG-21 was hit by an AIM-7E-2 fired by the 555th TFS/432nd TRW F-4D of Lt Col J E Brunson and Maj R S Pickett.

Except for Noi Bai and Kep, which were heavily bombed, every airfield remained operational, and even Noi Bai was able to launch 927th FR MiG-21s on the 23rd. That afternoon Nguyen Van Nghia and Le Van Kien were scrambled to intercept bombers heading for Suoi Rut. They attacked four F-4s and Nghia claimed a Phantom II – the last victory credited to a MiG-21 ace – during the subsequent aerial battle, although the loss was not confirmed by USAF records. Nghia recalled;

‘I still remember one interesting thing about that day. I was ordered to engage as fast as possible and then disengage safely. After fulfilling our mission, we were returning to land, but Noi Bai, Gia Lam, Kep and Yen Bai airfields were under siege. We had no way to land, so we were allowed to eject over Vinh Tuong District. I thought my MiG was in such good condition that I really didn't want to leave it. It would be such a regrettable loss. I was also worried that if I chose to eject I could be injured and spend time in hospital. That would be terrible, so I decided to land by any means. If the taxiways were destroyed I would land on one of the pathways used to move aircraft into the evacuation section.

‘At that time there was section of runway at nearby Da Phuc airfield that was still in good condition, so I said over the radio, “45 is landing”. My wingman, Kien, was coded “52”. I decided to land, but didn't order him to do the same. He could choose to eject or land. I landed successfully and Kien did too. After landing, the F-4s used their 20 mm cannon to shoot at us, but I was lucky once again and they missed.’

On the morning of 25 December ADF-VPAF command held a conference to assess the results of the first phase of the battle and to formulate a plan for the next. While the MiG-21 pilots were preparing for their next sorties, two B-52Ds were hit by SAMs on the night of the 26th. Based on earlier enemy sorties, the VPAF HQ ordered MiG-21 fighter regiments to attack enemy fighter-bomber

groups striking targets in all sectors, especially SAM sites, as well as targeting the B-52s. On 27 December the 921st and 927th FRs launched nine MiG-21s, and their pilots claimed to have shot down two F-4Es and a B-52D. USAF loss records, however, confirmed that only one F-4E (the 13th TFS/432nd TRW jet of Maj C H Jeffcoat and 1Lt J T Trimble) had been lost to MiG-21 action, this aircraft being credited to Tran Viet of the 921st FR. According to VPAF records, Pham Tuan shot down the 28th BW/307th SW B-52D, commanded by Capt J Mize, that was lost on the night of 27/28 December, although the USAF claimed the aircraft had fallen victim to an SA-2.



North Vietnamese pilots run to their mission-ready MiG-21s in December 1972. All serviceable variants (MF, PFM, UM and US) of the MiG-21 operated by the VPAF can be seen here on the Noi Bai flightline  
(*Nguyen Xuan At*)

The last sorties of *Linebacker II* were disrupted by three MiG-21 pilots. On 28 December Hoang Tam Hung shot down the RA-5C Vigilante of Lt Cdr A H Agnew and Lt M F Haifley from RVAH-13 (embarked in *Enterprise*), while Vu Xuan Thieu claimed a B-52 over Son La. USAF records indicate that the bomber was merely damaged, and returned to its Guam base. On the night of 29 December Bui Doan Do intercepted an F-4 over Son Duong and claimed to have shot it down. Again, USAF records do not confirm this loss. The last aerial victory credited to the MiG-21 during the conflict came on 6 January 1973 when Han Vinh Tuong shot down a Firebee drone over the Suoi Rut-Hoa Binh area. Two days later Bui Doan Do's MiG-21 was destroyed by the 4th TFS/432nd TRW F-4D of Capt P D Howman and 1Lt L W Kullman southwest of Hanoi. It was the war's final MiG-21 loss.



On 27 December 1972 Pham Tuan (middle) claimed to have shot down Capt J Mize's 28th BW/307th SW B-52D over the border between Hoa Binh and Vinh Phu provinces. Here, he explains how he did it to fellow MiG-21 pilots (left to right) Nguyen Khanh Duy, Nguyen Van Tho, Tran Viet and Do Van Lanh. The USAF attributed the loss of the Stratofortress to an SA-2 missile, however (*István Toperczer archive*)

On 15 January President Nixon announced a suspension of all offensive action against North Vietnam. Secretary of State Henry Kissinger and Le Duc Tho met on 23 January and signed a treaty that was basically identical to the draft of three months earlier. The Paris Peace Accord was signed four days later. It stipulated that Vietnam was to be regarded as a sovereign country with its own territorial integrity.

During seven years of war, 56 MiG-21 pilots had claimed nearly 180 US aircraft destroyed in hundreds of dogfights. According to VPAF records, around 60 out of the 200+ MiG-21s lost during the war had been destroyed in aerial combat – US forces claimed to have shot down 86 MiG-21s. US Strategic Air Command intelligence put the number of MiG fighters in service with the VPAF after the aerial combats of *Linebackers I* and *II* at 144.



In late December 1972, after the victories of 'Dien Bien Phu in the Sky' (as *Linebacker II* was christened by the Vietnamese), General Vo Nguyen Giap (left), Commander-in-Chief of the People's Army of Vietnam, talks to successful MiG-21 pilots Nguyen Hong Nhi, Ngo Duy Thu, Do Van Lanh, Nguyen Duc Soat and Pham Tuan at Noi Bai (*Nguyen Xuan At*)

The North Vietnamese MiG-21 pilots firmly believed it was their skill and bravery that gave them superiority against a numerically strong and technically sophisticated enemy, particularly in dogfights. It was this, they felt, which had enabled them to make the MiG-21 the most effective fighter of the Vietnam War.



# APPENDICES

## HIGH-SCORING MiG-21 PILOTS

(All victories verified by VPAF official records)

**Nguyen Van Coc (921st FR)** (officially credited with nine victories)

30/4/67 – F-105D, 1Lt R A Abbott (PoW)

23/8/67 – F-4D, Capt L E Carrigan (PoW) and 1Lt C Lane (KIA)

7/10/67 – F-105D, Maj W E Fullam (KIA), loss attributed to AAA in US records

18/11/67 – F-105D, Lt Col W N Reed (rescued)

20/11/67 – F-105, not confirmed by US records

12/12/67 – F-105, not confirmed by US records

7/5/68 – F-4B, Lt Cdr E S Christensen and Lt(jg) W A Kramer (both rescued)

4/6/68 – Firebee drone

8/11/68 – Firebee drone

3/8/69 – Firebee drone (shared)

**Note** – On 4 May 1967 Coc was shot down by the 555th TFS/8th TFW F-4C of Col R Olds and 1Lt W D Lafever, ejecting safely from his MiG-21

**Pham Thanh Ngan (921st FR)** (officially credited with eight victories)

14/12/66 – Firebee drone

4/5/67 – F-105, not confirmed by US records

16/9/67 – RF-101C, Maj B R Bagley (PoW)

3/10/67 – F-4D, Maj J D Moore and 1Lt S B Gulbrandson (both rescued)

7/10/67 – F-4D, Maj I D Appleby (KIA) and Capt W R Austin (PoW), loss attributed to SAM in US records

18/11/67 – F-105F, Maj O M Dardeau and Capt E W Lehnhoff (both KIA)

20/11/67 – F-105D, Capt W W Butler (PoW)

3/2/68 – F-102A, 1Lt W L Wiggins (KIA)

**Note** – On 22 September 1968 Ngan's MiG-21 was damaged by a RIM-8 Talos SAM fired from USS *Long Beach* (CGN-9)

**Nguyen Hong Nhi (921st FR)** (officially credited with eight victories)

4/3/66 – Firebee drone  
31/8/67 – RF-4C, not confirmed by US records  
10/9/67 – RF-101C, not confirmed by US records  
26/9/67 – F-4D, not confirmed by US records  
9/10/67 – F-105D, Maj J A Clements (PoW)  
7/11/67 – F-105D, Maj W C Diehl (PoW – died)  
17/12/67 – F-105, not confirmed by US records  
1/8/68 – F-8, not confirmed by US records

**Note** – On 26 April 1966 Nhi was shot down by the 480th TFS/35th TFW F-4C of Maj P J Gilmore and 1Lt W T Smith, ejecting safely from his MiG-21. On 1 August 1968 Nhi was shot down by the VF-51 F-8H of Lt N K McCoy, ejecting safely from his MiG-21

**Mai Van Cuong (921st FR)** (officially credited with eight victories)

8/10/66 – F-105, not confirmed by US records  
28/4/67 – F-105D, Capt F A Caras (KIA)  
16/5/67 – Firebee drone  
30/9/67 – F-105, not confirmed by US records  
7/10/67 – F-4, not confirmed by US records  
19/6/68 – Firebee drone  
3/9/68 – Firebee drone  
20/9/68 – Firebee drone  
9/2/69 – Firebee drone  
24/6/69 – Firebee drone

**Note** – On 6 January 1967 Cuong was shot down by the 555th TFS/8th TFW F-4C of Maj T M Hirsch and 1Lt R J Strasswimmer, ejecting safely from his MiG-21. On 26 October 1967 Cuong was shot down by the VF-143 F-4B of Lt(jg) R P Hickey and Lt(jg) J G Morris, ejecting safely from his MiG-21

**Dang Ngoc Ngu (921st FR)** (officially credited with seven victories)

13/8/66 – Firebee drone  
14/12/66 – F-105D, not confirmed by US records  
22/5/67 – F-4C, Capt E L Perrine and 1Lt K F Backus (both KIA), loss attributed to AAA in US records  
8/11/67 – F-4D, Maj W S Gordon (rescued) and 1Lt R C Brenneman (PoW)  
24/4/68 – Firebee drone

4/3/69 – Firebee drone

10/5/72 – F-4, not confirmed by US records

**Note** – On 22 May 1967 Ngu was shot down by the 389th TFS/366th TFW F-4C of Lt Col R F Titus and 1Lt M Zimer. On 8 July 1972 Ngu was shot down and killed by the 4th TFS/366th TFW F-4E of Capt R F Hardy and Capt P T Lewinski

**Nguyen Nhat Chieu (921st FR)** (officially credited with six victories)

20/9/65 (MiG-17) – F-4B, not confirmed by US records

20/5/67 – F-4C, Maj J L Van Loan and 1Lt J E Milligan (both PoWs)

23/8/67 – F-4D, Maj C R Tyler (PoW) and Capt R N Sittner (KIA)

23/8/67 – F-4D, Maj R R Sawhill (PoW) and 1Lt G L Gerndt (PoW)

7/10/67 – F-105F, Capt J D Howard and Capt G L Shamblee (both rescued)

29/10/67 – F-4, not confirmed by US records

**Note** – On 17 June 1965 Chieu was shot down by the VF-21 F-4B of Lt J E D Batson and Lt Cdr R B Doremus, ejecting safely from his MiG-17

**Nguyen Ngoc Do (921st FR)** (officially credited with six victories)

30/4/67 – F-105F, Maj L K Thorness and Capt H E Johnson (both PoWs)

5/5/67 – F-105D, 1Lt J R Shively (PoW), loss attributed to AAA in US records

20/7/67 – RF-4C, Maj G W Corbitt and 1Lt W O Bare (both KIA), lost on 26/7/67 according to US records

2/8/67 – F-105, not confirmed by US records

16/9/67 – RF-101C, Capt R E Patterson (rescued), loss attributed to AAA in US records

27/9/67 – F-105 damaged, not confirmed by US records

5/2/68 – F-105D, Capt C W Lasiter (PoW), lost on 4/2/68 according to US records

**Note** – On 2 January 1967 Do was shot down by the 433rd TFS/8th TFW F-4C of Capt J B Stone and 1Lt C P Dunnegan, ejecting safely from his MiG-21

**Nguyen Dang Kinh (921st FR)** (officially credited with six victories)

21/7/66 – Firebee drone

5/12/66 – F-105D, Maj B N Begley (KIA)

7/11/67 – F-4, not confirmed by US records  
19/11/67 – EB-66, not confirmed by US records  
19/12/67 – F-4 damaged, not confirmed by US records  
3/1/68 – F-105, not confirmed by US records  
21/9/68 – Firebee drone  
26/10/68 – F-4, not confirmed by US records

**Note** – On 23 April 1966 Kinh was shot down by the 555th TFS/8th TFW F-4C of Capt R E Blake and 1Lt S W George, ejecting safely from his MiG-21. On 2 January 1967 Kinh was shot down by the 555th TFS/8th TFW F-4C of Col R Olds and 1Lt C C Clifton, ejecting safely from his MiG-21. On 23 April 1967 Kinh was shot down by the 389th TFS/366th TFW F-4C of Maj R D Anderson and Capt F D Kjer, ejecting safely from his MiG-21

**Vu Ngoc Dinh (921st FR)** (officially credited with six victories)

5/12/66 – F-105, not confirmed by US records  
19/12/66 – F-105, not confirmed by US records  
30/4/67 – F-105D, Maj A Lenski, confirmed as damaged in US records  
17/12/67 – F-105D, 1Lt J T Ellis (PoW)  
17/12/67 – F-105, not confirmed by US records  
28/1/70 – HH-53B, Maj H G Bell and five crew (all KIA)

**Note** – On 2 January 1967 Dinh was shot down by the 555th TFS/8th TFW F-4C of 1Lt R F Wetterhahn and 1Lt J K Sharp, ejecting safely from his MiG-21. On 20 May 1967 Dinh was shot down by the 389th TFS/366th TFW F-4C of Maj R D Janca and 1Lt W E Roberts, ejecting safely from his MiG-21. On 26 June 1968 Dinh was shot down by the VF-51 F-8H of Cdr L R Myers, ejecting safely from his MiG-21

**Le Thanh Dao (927th FR)** (officially credited with six victories)

18/12/71 – F-4D, Maj K R Johnson and 1Lt S R Vaughan (both PoWs)  
10/5/72 – F-4J, Cdr H L Blackburn (PoW, died) and Lt S A Rudloff (PoW), loss attributed to AAA in US records  
12/6/72 – F-4, not confirmed by US records  
24/6/72 – Firebee drone (shared)  
24/7/72 – F-4, not confirmed by US records  
9/9/72 – F-4, not confirmed by US records  
11/9/72 – F-4E, Capt B M Ratzlaff and Capt J D Heeren (both PoWs)

1/10/72 – F-4, not confirmed by US records

**Note** – on 15 October 1972, Dao was shot down by the 307th TFS/432nd TRW F-4E of Capt G M Rubus and Capt J L Hendrickson, ejecting safely from his MiG-21

**Nguyen Duc Soat (921st FR)** (officially credited with six victories)

13/3/69 – Firebee drone

23/5/72 – A-7B, Cdr C E Barnett (KIA), loss attributed to SAM in US records

24/6/72 – F-4E, Capt D B Grant and Capt W D Beekman (both PoWs)

27/6/72 – F-4E, Capt J P Cerak and Capt D B Dingee (both PoWs)

30/7/72 – F-4D, Capt G B Brooks and Capt J M McAdams (both rescued)

26/8/72 – F-4J, 1Lt S G Cordova (KIA) and 1Lt D L Borders (rescued)

12/10/72 – F-4E, Capt M A Young and 1Lt C H Brunson (both PoWs)

**Nguyen Tien Sam (927th FR)** (officially credited with five victories)

5/7/72 – F-4E, Capt W A Spencer and 1Lt B J Seek (both PoWs)

24/7/72 – F-4E, Capt S A Hodnett and 1Lt D Fallert (both rescued)

29/7/72 – F-4E, Capt J D Kula and Capt M K Matsui (both PoWs)

12/9/72 – F-4E, Capt R V Zuberbuhler and Capt F C McMurray (both PoWs)

5/10/72 – F-4D, Capt K H Lewis and Capt J H Alpers (both PoWs)

**Note** – On 9 February 1969 Sam's aircraft ran out of fuel while heading for Tho Xuan airfield and he ejected safely from his MiG-21. On 12 October 1972 Sam was shot down by the 555th TFS/432nd TRW F-4D of Capt J A Madden and Capt L H Pettit, ejecting safely from his MiG-21

**Nguyen Van Nghia (927th FR)** (officially credited with five victories)

23/6/72 – F-4, not confirmed by US records

24/6/72 – F-4D, 1Lt J L McCarty (KIA) and 1Lt C A Jackson (PoW)

6/10/72 – F-4E, Capt J P White and Capt A G Egge (both rescued)

8/10/72 – F-4, not confirmed by US records

24/11/72 – Firebee drone

23/12/72 – F-4, not confirmed by US records

**Le Trong Huyen (921st FR)** (officially credited with four victories)

21/9/66 – F-105D, Capt G L Ammon (KIA), loss attributed to AAA in US records

2/12/66 – F-105D, Capt M L Moorberg (KIA), loss attributed to AAA in US records

30/4/67 – F-105D, Capt J S Abbott (PoW)

12/5/67 – F-105D, Capt E W Grenzebach (KIA), loss attributed to AAA in US records (shared with Dong Van Song)

11/7/67 – A-4, not confirmed by US records

**Note** – On 3 March 1972 Huyen was killed when an Li-2 transport aircraft he was a passenger in was accidentally shot down by an SA-2 while heading for Vinh airfield

**Dong Van Song (921st FR)** (officially credited with four victories)

11/7/66 – F-105D, Maj W L McClelland (rescued), loss attributed by US records to lack of fuel

12/5/67 – F-105D, Capt E W Grenzebach (KIA), loss attributed to AAA in US records (shared with Le Trong Huyen)

9/10/67 – F-105, not confirmed by US records

14/1/68 – EB-66C, Maj P H Mercer (rescued) and six crew members (two rescued, four PoWs)

**Note** – On 5 November 1966 Song was shot down by the 480th TFS/366th TFW F-4C of 1Lt W J Latham and 1Lt K J Klaue, ejecting safely from his MiG-21. On 10 August 1967 Song was shot down by the VF-24 F-4B of Lt(jg) G H Freeborn and Ens R J Elliot, ejecting safely from his MiG-21. On 24 October 1967 Song was shot down by the 433rd TFS/8th TFW F-4D of Maj W L Kirk and 1Lt T R Bongartz, ejecting safely from his MiG-21

**Dinh Ton (921st FR)** (officially credited with four victories)

15/4/68 – Firebee drone

26/5/68 – Firebee drone

2/6/68 – Firebee drone

16/6/68 – F-4J, Cdr W E Wilber (PoW) and Lt(jg) B F Rupinski (KIA)

13/4/71 – O-2A, not confirmed by US records

20/4/71 – OV-10, not confirmed by US records

**Note** – On 11 September 1972 Ton and Vasily Motlov (Russian instructor) were shot down by the VMFA-333 F-4J of Maj L T Lasseter and Capt J D Cummings, ejecting safely from their two-seat MiG-21U

**Pham Phu Thai (921st FR)** (officially credited with four victories)

1/6/72 – F-4E, Capt G W Hawks and Capt D B Dingee (both rescued), loss attributed to SAM in US records

10/6/72 – F-4, not confirmed by US records (shared with Bui Thanh Liem)

13/6/72 – F-4E, 1Lt G O Hanson and 1Lt R J Fulton (both PoWs)

24/6/72 – F-4, not confirmed by US records

27/6/72 – F-4E, Capt L A Aikman (rescued) and Capt T J Hanton (PoW)

**Note** – On 10 July 1968 Thai was shot down by the VF-33 F-4J of Lt R Cash and Lt J E Kain, ejecting safely from his MiG-21. On 15 October 1972 Thai was shot down by the 34th TFS/388th TFW F-4E of Maj R L Holtz and 1Lt W C Diehl, ejecting safely from his MiG-21

**Do Van Lanh (921st FR)** (officially credited with four victories)

20/5/72 – F-4D, 1Lt J D Markle (rescued) and Capt J W Williams (PoW)

13/6/72 – F-4, not confirmed by US records

21/6/72 – F-4E, Capt G A Rose and 1Lt P A Callaghan (both PoWs)

24/6/72 – Firebee drone (shared)

9/9/72 – F-4E, Capt W J Dalecky and Capt T M Murphy (both rescued), loss attributed to AAA in US records

**Note** – On 9 July 1980 Lanh was killed while flying a MiG-21 on a training flight over Thai Nguyen

# COLOUR PLATES



1

**MiG-21F-13 'Fishbed-C' 4420 of Nguyen Ngoc Do, 921st FR, Noi Bai, 16 September 1967**

The first ex-Cuban MiG-21F-13 (*Izdeliye 74*) 'Fishbed-Cs' arrived in North Vietnam via the Soviet Union during the summer of 1967. Nguyen Ngoc Do was flying this aircraft on 16 September 1967 when he shot down a 20th TRS/432nd TRW RF-101C over Son La, the Voodoo's loss being attributed to AAA in USAF records.



2

**MiG-21F-13 'Fishbed-C' 4426 of Nguyen Nhat Chieu, 921st FR, Kep, 29 October 1967**

Nguyen Nhat Chieu was flying this camouflaged aircraft on 29 October 1967 when, according to VPAF records, he shot down an F-4 over the Nam Dinh–Ninh Binh area. It was his sixth aerial victory, although Chieu's claim does not tally with US loss records.





3

**MiG-21F-13 'Fishbed-C' 4520 of Pham Thanh Ngan, 921st FR, Noi Bai, 1967**

Ace Pham Thanh Ngan frequently flew this aircraft during the aerial battles of 1967, he and his comrades claiming eight US aircraft destroyed while at the controls of 'Red 4520' – note the red stars on its nose.



4

**MiG-21PFL 'Fishbed-D' 4023 of Mai Van Cuong, 921st FR, Noi Bai, 4 December 1966**

Mai Van Cuong was on combat alert duty at the controls of this UB-16-57-equipped MiG-21PFL (*Izdeliye 76*) on 4 December 1966. One month later, on 6 January 1967, Cuong was flying this aircraft when he was shot down by the F-4C of Maj T M Hirsch and 1Lt R J Strasswimmer. He ejected and landed safely.



5

**MiG-21PFL 'Fishbed-D' 4127 of Dong Van Song, 921st FR, Noi Bai, 1966**

During the first half of 1966 Dong Van Song frequently flew this unusually camouflaged aircraft, which was credited with two aerial victories over US aircraft by Noi Bai-based MiG-21 pilots. On 14 July 1966 it was shot down by the F-4C of Capt W J Swendner and 1Lt D A Buttell, Ta Van Thanh being killed when the aircraft disintegrated after an AIM-9B flew up its tailpipe and exploded north of Hanoi. Thanh was chasing F-105s at the time of his death.



6

**MiG-21PFL 'Fishbed-D' 4227 of the 921st FR, Noi Bai, 1967**

MiG-21 aces Nguyen Ngoc Do, Nguyen Nhat Chieu and Nguyen Van Coc claimed to have shot down F-105s and F-4s while flying this aircraft during 1967. Do downed an F-105F on 30 April, Chieu was credited with shooting down an F-4C on 20 May and Coc claimed an F-4D on 23 August. All three successes were confirmed by USAF loss records.



7

**MiG-21PFL 'Fishbed-D' 4320 of Nguyen Ngoc Do, 921st FR, Noi Bai, 27 September 1967**

Nguyen Ngoc Do added a third aerial victory to the two indicated by the red stars displayed on this aircraft when he shot down an F-105 over North Vietnam on 27 September 1967. It was his fifth kill, although the Thunderchief's loss was not corroborated by USAF records.



8

**MiG-21PFL 'Fishbed-D' 4324 of Le Trong Huyen, 921st FR, Noi Bai, 30 April 1967**

This MiG-21PFL enjoyed success with no fewer than nine pilots – Le Trong Huyen, Pham Thanh Ngan, Nguyen Ngoc Do, Nguyen Van Ly, Nguyen Hong Nhi, Dang Ngoc Ngu, Nguyen Van Coc, Vu Ngoc Dinh and Nguyen Dang Kinh – during 1967. Le Trong Huyen was responsible for the first red star displayed on the nose of the fighter when he shot down an F-105D of the 333rd TFS/355th TFW on 30 April 1967. The last was added after Nguyen Dang Kinh shot down an F-4 on 19 December 1967 (not listed in US records, however). This fighter is displayed at the People's Army Museum in Hanoi, having been officially recognised as a 'national treasure' in 2015.



**9**

**MiG-21PFL 'Fishbed-D' 4325 of Nguyen Van Coc, 921st FR, Noi Bai, 30 April 1967**

Nguyen Van Coc was flying this aircraft on 30 April 1967 when he shot down an F-105D of the 354th TFS/355th TFW over the Thanh Son area. He was also at the controls when the fighter was hit by an AIM-9B fired by the F-4C of Col R Olds and 1Lt W D Lafever on 4 May 1967, Coc ejecting successfully.



**10**

**MiG-21PFL 'Fishbed-D' 4326 of Nguyen Van Coc, 921st FR, Kep, 18 November 1967**

Nguyen Van Coc added a further aerial victory to the 13 indicated by the red stars displayed on this aircraft when he shot down an F-105D of the 469th TFS/388th TFW on 18 November 1967. The MiG-21 pilots of the 921st FR claimed a total of 14 victories while flying this aircraft during 1967. '4326' is displayed at the ADF-VPAF Museum in Hanoi.



**11**

**MiG-21PFM 'Fishbed-F' 5006 of Le Van Kien, 927th FR, Noi Bai, 26 August 1972**

Le Van Kien was flying this aircraft when he supported ace Nguyen Duc Soat during a rare engagement with US Marine Corps aircraft on 26 August 1972. Although Soat was credited with shooting down the F-4J of 1Lt S G Cordova and 1Lt D L Borders, Kien ran '5006' out of fuel and he was forced to eject. He landed safely.



**12**

**MiG-21PFM 'Fishbed-F' 5015 of the 921st FR, Tho Xuan, 1968**

Originally flown in natural metal finish, this 921st FR MiG-21PFM (*Izdeliye* 94A) was camouflaged with dark green spots over light green upper surfaces when it was relocated south from Noi Bai to Tho Xuan airfield during 1968. Aces Nguyen Van Coc, Pham Thanh Ngan, Nguyen Dang Kinh, Dang Ngoc Ngu, Nguyen Tien Sam and Dinh Ton subsequently flew this fighter over Military District No 4 on numerous occasions.





**13**

**MiG-21PFM 'Fishbed-F' 5018 of Nguyen Dang Kinh, 921st FR, Kep, 3 January 1968**

This aircraft displayed an unusual camouflage finish at a time when there were no shelters on the airfields of Military District No 4. VPAF records indicate that on 3 January 1968 Nguyen Dang Kinh was flying 'Red 5018' when he claimed to have shot down an F-105 over the Thanh Son area. His victory was not, however, confirmed by USAF loss records.



**14**

**MiG-21PFM 'Fishbed-F' 5020 of Nguyen Tien Sam, 927th FR, Noi Bai, 5 July 1972**

On 5 July 1972 Nguyen Tien Sam shot down an F-4E of the 34th TFS/388th TFW northeast of Kep air base while flying this fighter, which was adorned with 12 red stars. The jet is also on display at the ADF-VPAF Museum in Hanoi.



**15**

**MiG-21PFM 'Fishbed-F' 5030 of Pham Thanh Ngan, 921st FR, Noi Bai, 3 February 1968**

On 3 February 1968 Pham Thanh Ngan was flying this fighter when he shot down 1Lt W L Wiggins' F-102A Delta Dagger over the Hoi Xuan area of Thanh Hoa Province.



**16**

**MiG-21PFM 'Fishbed-F' 5033 of Nguyen Duc Soat, 927th FR, Kep, 18 July 1972**

Nguyen Duc Soat was at the controls of this aircraft during an aerial engagement on 18 July 1972 that saw his wingman, Nguyen The Duc, shot down and killed by the 13th TFS/432nd TRW F-4D of Lt Col C G Baily and Capt J S Feinstein.



**17**

**MiG-21PFM 'Fishbed-F' 5040 of Nguyen Van Nghia, 927th FR, Noi Bai, 1972**

Nguyen Van Nghia frequently flew this overpainted aircraft with the 927th FR during the aerial battles of the second half of 1972. He was officially credited with five victories over F-4s and a Firebee drone.



**18**

**MiG-21PFM 'Fishbed-F' 5057 of Le Thanh Dao, 927th FR, Gia Lam, 24 July 1972**

VPAF records indicate that on 24 July 1972 Le Thanh Dao was flying this MiG-21PFM when he shot down an F-4 over the Hai Duong area, although this claim is not supported by US loss records.





19

**MiG-21PFM 'Fishbed-F' 5066 of the 927th FR, Noi Bai, 1972**

This aircraft was one of the last MiG-21PFMs delivered to the VPAF. It initially served with the 921st FR during the late 1960s in a natural metal finish. '5066' was transferred to the 927th FR in 1972, where it received this unusual, softly dappled camouflage scheme of dark green over natural metal.



20

**MiG-21MF 'Fishbed-J' 5106 of Tran Viet, 921st FR, Hoa Lac, 8 July 1972**

The VPAF received MiG-21MF (*Izdeliye* 96F) 'Fishbed-Js' in December 1971. On 8 July 1972 Tran Viet was flying this example when he used an R-3S missile to down the F-4E of Lt Col R E Ross and Capt S M Imaye over Thanh Son.



21

**MiG-21MF 'Fishbed-J' 5112 of the 921st FR, Noi Bai, 1972**

This MiG-21MF was operated by the 921st FR, the fighter being rushed into service while still camouflaged in its faded Soviet European camouflage scheme. This type regularly flew with two fuel tanks on the outer pylons and two R-3S AAMs on the inner ones. According to VPAF records, Nguyen Hong My was flying this aircraft when he was shot down by the 13th TFS/432nd TRW F-4D of Maj E D Cherry and Capt J S Feinstein on 16 April 1972.



22

**MiG-21MF 'Fishbed-J' 5118 of Dang Ngoc Ngu, 921st FR, Noi Bai, 8 July 1972**

Snr Capt Dang Ngoc Ngu was flying this aircraft when he was shot down by the F-4E of Capt R F Hardy and Capt P T Lewinski on 8 July 1972. Seven-victory ace Ngu almost certainly ejected from this aircraft but was killed when he hit the ground after his parachute failed to open properly.



23

**MiG-21MF 'Fishbed-J' 5121 of Pham Tuan, 921st FR, Yen Bai, 27 December 1972**

Pham Tuan was flying this aircraft during the night of 27 December 1972 when he claimed to have shot down a B-52D over the border of Hoa Binh and Vinh Phu provinces – the USAF stated the bomber fell to an SA-2, however. 'Red 5121' is displayed at the People's Army Museum in Hanoi, having been recognised as a 'national treasure' in 2012.



24

**MiG-21MF 'Fishbed-J' 5128 of Do Van Lanh, 921st FR, Noi Bai, 21 June 1972**

On 21 June 1972 Do Van Lanh was credited with shooting down the F-4E of Capt G A Rose and 1Lt P A Callaghan in this aircraft, adding the victory to the four indicated by the red stars displayed on the nose of the jet.



25

**MiG-21MF 'Fishbed-J' 5136 of Dang Ngoc Ngu, 921st FR, Noi Bai, 10 May 1972**

Pilots of the 921st FR were credited with five aerial victories while flying this MiG-21MF during the early months of 1972. On 10 May that same year Dang Ngoc Ngu added a further kill marking to 'Red 5136' when he was credited with shooting down an F-4, although US loss records do not corroborate his claim.



26

**MiG-21MF 'Fishbed-J' 5138 of Pham Phu Thai, 921st FR, Noi Bai, 1972**

Pham Phu Thai frequently flew this aircraft, which was credited with three aerial victories achieved by 921st FR MiG-21 pilots during 1972. The red stars that adorned VPAF fighters indicated the victory tallies credited to that particular jet.



27

**MiG-21MF 'Fishbed-J' 5147 of the 921st FR, Anh Son, 1972**

This aircraft was flown by 921st FR pilots such as Pham Phu Thai, Pham Tuan, Vu Dinh Rang and Hoang Bieu from Dua airfield, in Anh Son district, during 1972. This was a secret base with an underground hangar cut into a hill in which MiG-21 fighters could be hidden until called upon to intercept US aircraft flying north and south of the Annamite mountains.



28

**MiG-21U 'Mongol-A' 4124 of the 921st FR, Noi Bai, 1965**

This training aircraft was handed over to the VPAF as part of the first batch of MiG-21PFLs at the end of 1965. The first MiG-21 trainer variant retained the overall dimensions of the MiG-21F-13. The export version of the MiG-21U with the original narrow-chord tail was designated *Izdeliye* 66-400.



29

**MiG-21U 'Mongol-B' 4328 of the 921st FR, Noi Bai, 1966**

MiG-21U 'Red 4328' is depicted here armed with UB-16-57 rocket pods in preparation for a live-fire training exercise during 1966. The MiG-21U *Izdeliye* 66-600 'Mongol-B' was built with a new wide-chord vertical tail and larger PT-21U brake parachute container at the base of the rudder, both of which were patterned on the single-seat MiG-21PFM.



30

**MiG-21US 'Mongol-B' 5077 of the 921st FR, Noi Bai, 1972**

This MiG-21US arrived with the last batch of MiG-21PFMs in 1968 and was used at Noi Bai during 1972. The second generation of MiG-21 trainers was similar to the MiG-21PF/PFM. The MiG-21US was built for export under the

*Izdeliye* 68A product code, and this variant was equipped with more capable KM-1 ejection seats instead of the old SK-1 type.

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# ABOUT THE AUTHOR

Dr István Toperczer is a flight surgeon with the Hungarian Air Force. In his spare time, he has become one of the few individuals from outside Vietnam to be given open access to the files of the VPAF. He has made numerous visits to Hanoi, and other Vietnamese cities, in the past 20 years, and has interviewed many of the leading aces from the war years. He wrote the hugely successful Osprey Combat Aircraft 25: *MiG-17 and MiG-19 Units of the Vietnam War*, Osprey Combat Aircraft 29: *MiG-21 Units of the Vietnam War* and Osprey Aircraft of the Aces 130: *MiG-17/19 Aces of the Vietnam War*.

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Jim Laurier is a native of New England, growing up in New Hampshire and Massachusetts. He has been drawing since he could hold a pencil and throughout his life he has worked in many mediums creating artwork on a variety of subjects. He has worked on the Osprey Aviation list since 2000, and in that time he has produced some of the finest artwork seen in these volumes.

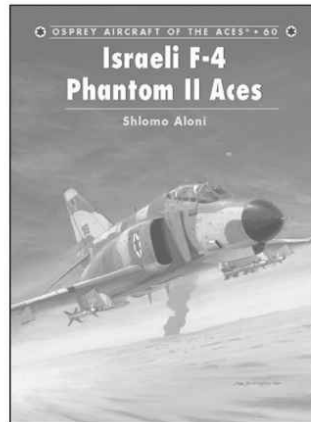
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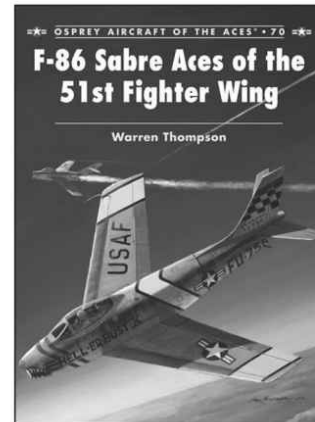
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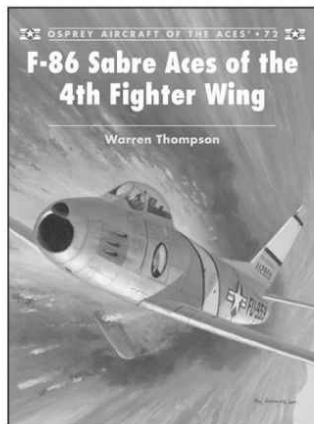
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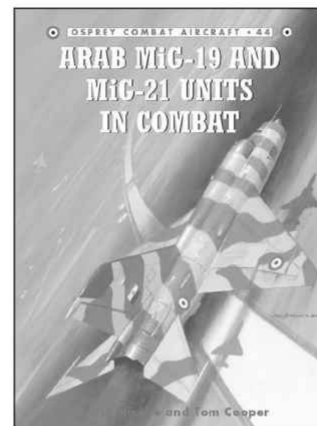
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## **Front Cover**

On the morning of 11 September 1972, the USAF despatched bombers to attack the Hoa River Bridge and transportation targets along Route No 1, supported by fighters flying holding patterns over Yen Bai and Kep airfields.

At 1014 hrs MiG-21PFMs of the 927th Fighter Regiment flown by Le Thanh Dao (in 'Red 5017') and Tran Van Nam had taken off from Noi Bai airfield to defend Route No 1 and intercept formations of chaff-dropping electronic warfare aircraft. The MiGs were directed to fly northeast of Kep, where Le Thanh Dao spotted four aircraft to his right and below, with four more further away. He quickly attacked the right-hand formation, getting on the tail of one of the F-4 Phantom IIs. When the distance was down to 1600 m, he fired an R-3S (K-13 'Atoll') air-to-air missile from his left underwing pylon. The weapon hit F-4E 69-0288 seconds later, the fighter bursting into flames. Dao quickly pulled into a climb to break off combat and then rolled his aircraft upside down to observe the result of his attack.

The Phantom II, flown by Capt B M Ratzlaff and J D Heeren of the 4th TFW's 335th TFS, crashed near Dong Mo, in Lang Son Province. Both crewmen ejected and were captured.

After seeing Dao's missile hit the F-4E, Tran Van Nam fired an R-3S at another aircraft, but he did not see its warhead detonate. Then, as he broke off the engagement, he sighted two more Phantom IIs, and fired his second missile. He reported subsequently seeing an F-4 trailing smoke, before it too burst into flames, although USAF loss records did not confirm this success (*Cover artwork by Gareth Hector*)

## **Title Page**

Tranh Hanh, commander of the 921st Fighter Regiment, climbs into the cockpit of his MiG-21PFL at Noi Bai air base in 1969. During this period, two versions of the MiG-21, namely the PFL and PFM, were in service with the regiment. (*Nguyen Xuan At*)